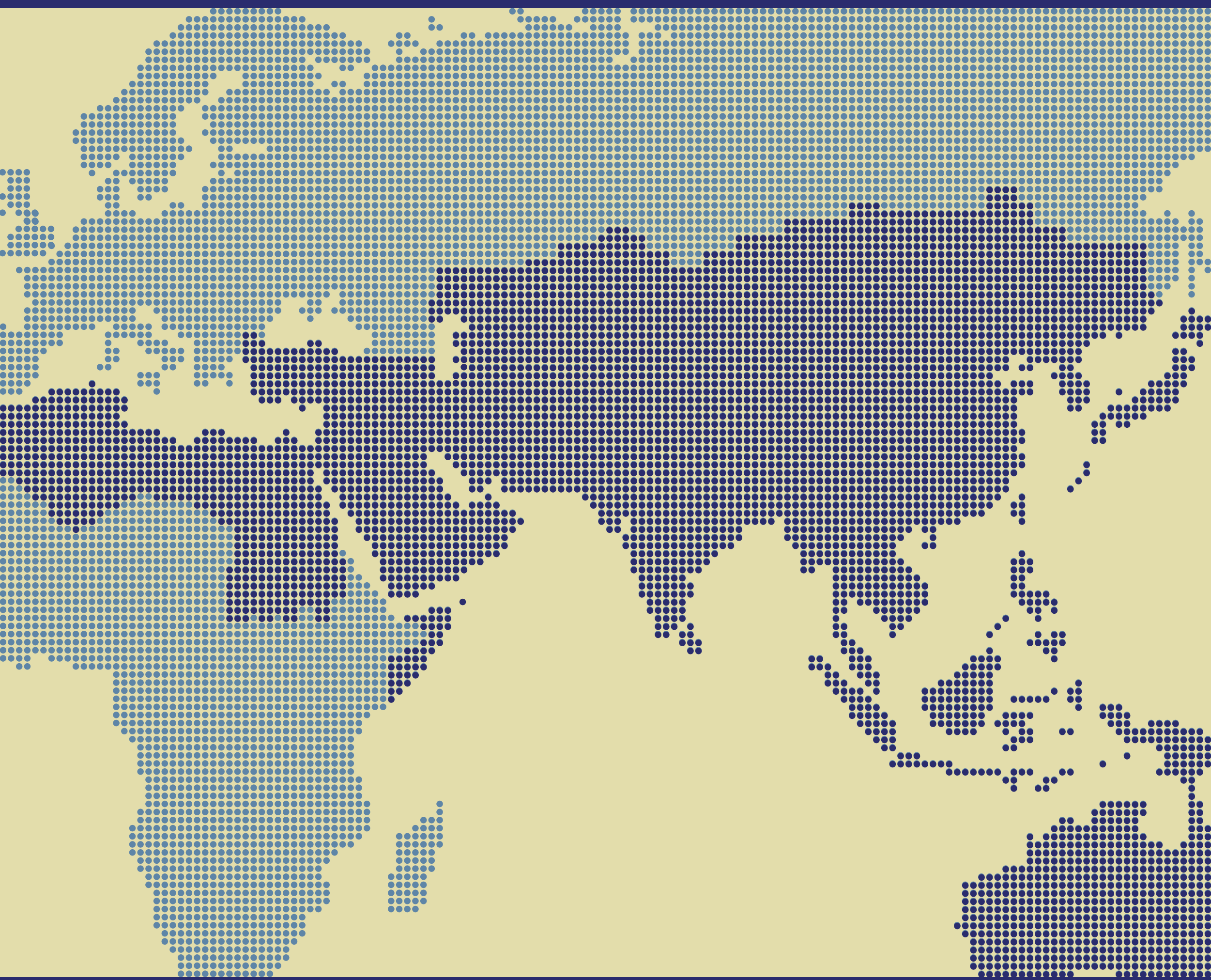
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CONTENTS

Victor Nemchinov[*]

Orientalist and the Book: Reflections on Changing Role of Libraries in the Information Field of the 21st Century

Abstract: scholars have special almost humane relations with professional literature that they collect for their studies. After decades of academic work their personal libraries may become a source of valuable information about their owners and their respective fields of study. Spheres of interest, book marks, epigraphy, textual study, - all this becomes a debating matter and a stock for further research in memorial libraries of prominent Orientalists that had donated their valuable personal pin-pointed book collections to the Institute of Oriental studies or to other institutions they had worked in. Researchers that work on tenure with their books gain a lot of insights and can substantially advance very special historical attributions and discoveries. These written sources stimulate knowledge transfer and give special flavor to the school of Russian Oriental studies. Dialoguing both with written sources, within and between generations stimulates talented research. This has become the rationale for setting an international study platform “Diaversity” that promotes rapid feedback in specialized knowledge transfer. This seems important in the time of Russian academic reform that deals with tangible and intangible capital. And libraries in social sciences encounter a number of threats: shortage of free space and financing, mortal danger of fire and water leakage. But they also offer scholars luxury of personal communication with history and this gives us a promising chance for leapfrog development.

Key words: historical science, Orientalists, library science, personal book collections, written sources, advanced knowledge transfer, “Diaversity”.

Discourse on the role of library books in academic research work has been due for quite a long while, though for professional scholars it seems, at first glance, self-evident. “Naturally, libraries are very important. What can be said here? I use them all the time”. Yet, today the issue is not trivial. I would like to outline my vision of the current place of libraries in academic research, to talk on the opportunities and dangers that await this social institution. Let me start with a succinct metaphor: professional library for a traveler in the ocean of human culture is like Captain Nemo’s submarine from "Mysterious Island" by Jules Verne. I say this from experience, having worked for four decades in the Institute of Oriental Studies, Russian Academy of Sciences.

Arriving in Germany in 1993 for the second time (after participating in the XXXII Congress of Asia and North Africa Studies in Hamburg) – to work in the interdisciplinary study group dealing with the structure, logic and function

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of historical consciousness, which took place in the "youngest" German university – in Bielefeld, I found myself on board of "Nautilus". Designed by prominent education sociologist Helmut Schelsky especially as a University of the latest modification, Bielefeld has a unique library, which occupies the entire space of the 1st floor cutting across departments and faculties. Once on the "deck", you immediately find yourself in a modern book depot and have the right to be in it daily from eight in the morning until the midnight. Take the books that interest you and work with them on one condition of leaving them on the reading tables, not placing them back on the shelves. Return – is the prerogative of librarians. This team of professionals knows how to maintain perfect order, and at the same time leaves you full freedom to work with any desired book.

Dr. Lubov Goryaeva told me about a similar impression made on her by the free access to the bookshelves in the library in the University of Malaya in Kuala Lumpur. But when one digs in the rich library collection with at least an age long tradition, the relics of personal book collections encapsulated in such libraries would represent gems of written sources and textology. Imagine what means for the historian of thought, say, a collection of 3,500 books accumulated by John Bastin which in fact is now a single oriental complex - an invaluable source of information. Individual book collections within the life span of a few generations turn into archeological treasures, which are important even in the smallest details – from book signs and marks on the margins to the linguistic peculiarities of the time and knowledge structures. Thus the professionalism of book gatherers turns their collections into written monuments. They come alive through the ages and again become acclaimed by new generations of professional researchers. That's why, in our computer age with all the newest electronic thematic search engines, databases, and digitized texts the printed book not only retains its content value, but allowing a ready possibility of repeated direct visual and tactile contact a paper book remains both an absolute must, and a super comfortable luxury for the researcher.

Scholars, researchers, and general readers accustomed to the important role of books in their daily lives, are well aware that such level of comfort is possible only in your own personal library. For the connoisseur, intellectual and sybarite this palpably distinct advantage of a printed book over the e-books conveniently and tightly packed for travel is quite apparent, though one does not exclude (and today definitely requires) the other. And yet to leave open several books, to get back to the familiar bookmarks, to review your pencil marks, to compare several texts and various definitions, to go to another bookshelf and pick up another familiar volume, to get distracted anticipating an easy come back, to get to the place in a text where your thought bounced to a new twist, and finally to allow yourself a little nap with a book... What can be compared to that intellectual luxury? Your opened books would stay like that as loyal friends, waiting not in the electronic sleep mode, but instantly ready

for dialogue until you return. It is this invaluable comfort and almost an addict need of intellectually controlled communication with the print media that a personal library provides you with. As succinctly was formulated in one of our conversations by Dr. Bagrat Seyranian: "You know how I imagine the paradise. This is – an infinite library with an unlimited number of books at your service". And in how many cases scholars professionally studying the East (linguists, historians, economists, art historians, literary critics) just technologically can not normally engage in their academic work, not having a bunch of necessary editions right at hand! Computer screen, even two or three paralleled monitors would not provide a scholar with the proper disposition for comparative study. To actively involve psychomotor potential a scholar really needs large book filled information space. For instance, lexicologist Dr. Anna Belova, conducting comparative etymological analysis of the pre-Islamic Arab languages simultaneously works with dozen of dictionaries and with several parallel texts contrasting and comparing various shades of meaning. Physical space required for such a study includes a place for several opened manuscripts from her personal collection, various textual sources in different languages and dialects at hand, dictionaries in rare languages (Accadian, Aramaic, Berber, Meroitic, Nubian, etc) for comparing definitions, books from library of the Institute of Oriental Studies collections, and Juri Zavadovskiy's selected materials on structural and morphological analysis of Arabic and Berber dialects.

Professor Zavadovskiy's rich memorial library on Middle East, Maghreb and Central Asia had a dramatically short life-span. It had been opened by his followers for the students and researchers in the University of Dushanbe, "to which Yuri Nikolaevich often traveled from Moscow to give lectures on Arabic literature. His memorial room stored a large number of dictionaries and books from his personal library. The fate of this room was sad: in the 90s during the fighting in Tajikistan, it was destroyed, as they say, by a direct bomb hit "[Unknown Pages of Russian Oriental Studies, 1997, pp 33-34]. In the heart of peaceful Moscow another valuable private library collected by academician Bobojan Gafurov, while he was director of the Institute of Oriental Studies, - a collection representing an important cross-cut of the mid-20th century literature about the East had perished being flooded during a water-supply breakdown.

I compare personal library of researcher with a bathyscaph well equipped and carefully prepared for autonomous scholarly "navigation". Such lab apart from being a written source of collected information permits palpable perception, stimulates memory, research incite and profound academic vision. Physical contact with the wealth of printed thought advances a dialogue, gives space to intuition, opens up a passage to different cultures and allows corporeal, intellectual and at the same time spiritual travel across time and into the new worlds. The books, which pile at your working table, lay at your bedside, books that are picked up from the shelves, give you a sense of communion with the author, provide you with the clues to understanding specific thought process –

and bestow the reader with a special rich feeling of having a full living. Thus the accumulated books that are collected in your library over the years become part of the biography of its owner. As noted by Dr. Svetlana Prozhogina (also in private conversation), "your library is like an opportunity of having a rich well-selected wardrobe: you then simply do not depend on the weather." Suitcases full of books brought by scholars from their foreign trips, books "excavated" in the second-hand bookshops, books donated by friends, presented by colleagues with the author's dedications and autographs, piles of printed papers, photographs, tracings, ethnographic materials – all this necessary and excessive wealth, which represents inviolable baggage of a scholar is constantly forcing him out of his apartment. Hence, is my metaphor of comparing the library to a submarine.

Three similar problems facing libraries as well as submarines, hang over them like the sword of Damocles: first, is an acute shortage of space; second, preservation of assets and their replenishing with the fresh stock of supply (scientific libraries, currently set into a long autonomous floating, are on extremely meager rations) and finally, comes the issue of survivability. The common irreplaceable fatal danger – is the fire on board, followed by the drowning in bids to extinguish the fire and (equivalent in catastrophic consequences) the risk of puncture in the heating water systems. Many of us still feel the drama of a February 1988 night when Library of the Academy of sciences (BAN) with its unique book and periodical funds went on fire[1]. Let alone the most recent two and a half million library entries burned and/or damaged in 2014 during the three days of extinguishing the library fire by pouring water in the premises of the INION library funds (Institute of Scientific Information in Social Sciences, RAS), which stays as a gaping open wound inflicted to the national and world culture. Such a loss does not fit into humane consciousness. One can only ponder what danger may loom next when moratorium on academic property rights will be lifted.

Entering my Institute of Oriental Studies, you almost automatically turn your head to the right, where a sad rack with a shelf for flowers is located and, if there is no vase with traditional carnations, you just calmly proceed to your office.

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[1] As witnessed by Dr. Tatyana Vinogradova: " after two transfers from temporary storage and drying process all [Oriental] newspapers got mixed up and for a long while it was necessary first to sort them by language (particularly the not filed, broken sets, odd and single copies) then to array them by titles and sort by chronological dates. In this recover process early last century Chinese newspapers were found that were originally collected by V. Alekseev and donated by him to the Asiatic museum. Evidently, there is no guarantee that collection remained intact. Some things could have perished, some items could get lost amidst the thick files of newspaper sets. Old catalogue cards that had survived show that actually, there were more newspapers in stock in the past. Yet I found an unopened envelope dated 1912 with two newspapers sent to the name of V. Alekseev". [Society and State in China. Vol. XILIII, part I. M.: IVRAN, 2013, p.556]

With the demise of our irreplaceable colleagues we are increasingly losing their most loyal silent friends (in the words of Semen Makarenko, "the books are just bound people"). Is that a shortage of available dwelling space or just mere human ignorance that has to be blamed, I hesitate to say, but with the immediate sale of Dr. A. Litman apartment by his departing children the rich library on Indian philosophy collected over the years in Litman's home was simply thrown out into the nearest dustbin. A little more "lucky" were the books of Dr. G. Kotovsky: the heir to his apartment had traded his rich and carefully collected library at retail. Though several volumes from the collection have enriched the library of IAAS, the Centre for Indian Studies, which was headed by Dr. G. Kotovsky for many years, could get for its professional Indological library only the unclaimed and unsold old statistical reference books on Indian agriculture. Absolutely slurred remains the fate of a very rich personal library with books on Eastern art that Dr. Tatiana Grigorieva, for lack of space, had to keep in her unguarded summer country cottage house (dacha).

Visiting the library in the Institute of Oriental Studies, our indispensable scientific library, that organizationally falls under the management by INION, RAS, I asked the librarians if they can recall when personal libraries of our scholars were accepted as donations to their funds. The answer was: "Never" – although in 2014 the library has started processing of about 3000 volumes that Prof. L. Kontsevich, the developer of transliteration system from Korean Hangeul characters to the Cyrillic alphabet, had insisted to be preserved in the Institute. This complex work is nearing its completion. Yet transferring a personal library to the public or to a specialized library is a burdensome gift both for the donor and the recipient. Gifts and donations by law are subjected to paying a very substantial tax that encroaches on the already very meager sums currently allotted to the public and professional libraries. And how under such conditions can they replenish the ever-growing book losses? In the IOS library I was shown a debt box full of claim cards for the books that had been issued to the readers and that were never returned. With the demise of a reader the borrowed library books invariably disappear. Thus in response to librarian requests for the return of borrowed literature the relatives almost always gave the answer: "Ah, you know, we threw all that away instantly."

However, there are scientific departments, which have been lucky enough to continue the posthumous dialogue with a scholar. The most recent example – several hundred books related to the East donated to the Center for Arab and Islamic Studies, IOS by the family of academician Eu. Primakov in 2015. I had a chance of closely working with him when as director of the IOS he was co-chairing the annual Soviet-American conferences on Problems of modern Asia that were alternately held in the USA and the USSR. I was a contributor on South Asia and India discussions and also translated to Eu. Primakov, providing simultaneous interpretation. We knew each other pretty well. But having recently studied in his personal book collection, I saw him in quite

a new light. Hundreds of impressive dedicatory inscriptions from the authors and dozens of book-autographs, have revealed the hitherto little-known aspects in the life of this outstanding man.

The IOS department of Written Monuments of Eastern Peoples is located in the M.N.O. Osmanov Memorial library on Iranian literature, which largely predetermines the nature and the style of the daily work in this department. It is interesting to note that this compact, perfectly chosen collection of valuable books, numbering about 1,000 volumes, actually performs the function of materialized emanation of the scholar's thought. Direct access to his thematic selection of Oriental written sources and to professional literature collected by Prof. Osmanov enables scholars, employees and graduate students to educate themselves, to check their thoughts in an array of representative information and to get a needed pin-pointed input even without the physical presence of the mentor who had collected this priceless library. It may be appropriate to recall here a statement by academician Natalia Bechtereva that not only the thought, but consciousness as well can exist apart from the brain, because a concept is not a letter, but rather the spirit, concealed in a scholar's library[2]. The accumulated knowledge gets reborn each time anew through the understanding, based on the feeling, will and the interest of new experts. Young researchers independently studying in such highly specialized personal collections of the outstanding scholars are privileged to have at hand not only a ready-made extensive bibliographic review, but they also get access to the source material for their own first discoveries; while the experienced researchers of the Middle Eastern verbal culture can plunge into vast information fields, encompassing data sources in Oriental chronology, epigraphy, folklore, paleography, archaegraphy, onomastics, anthroponymics codicology, sphragistics, heraldry and numismatics. The value of complementing and contrasting several research fields is particularly noticeable during the divisional meetings and academic seminars, where the library, in fact, serves as an equal participant in the discussions. Right during the debates, scholars do find a needed clarification, a required reference or quotation just by taking an appropriate book from the shelf and, having quoted a well-conceived idea they can instantly reconfirm the subject-thematic attribution or can rely on already tried and tested method of investigation of the written monument under discussion. Thus such valuable book collections open up the consciousness of researchers to academic self-identification with the studied heritage in a refined and intellectually rich professional environment.

Similar research opportunities for historians, archeologists, and Egyptologists are provided by Prof. V. Avdiyev's memorial room and library belonging to the Department of ancient history of the East, where over 2300 rare books in various languages are carefully preserved. The library, located in a separate room, re-

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[2] like A. Losev library in his house in Arbat street, 33 in Moscow.

mains for several decades the favorite gathering place of informal communication between different generations of scholars that share similar research interests. Currently this collection receives personal library of Ja. Cher, an expert on petroglyphs of Middle and Central Asia (that contains over 20 boxes of books on primitive art, on typological methods in archeology and in study of historical artifacts). Tatyana Stepugina wants to make available her rare books to the department. Academician Natalia Nikolaeva, who had never worked in the Institute of Oriental Studies, considered it very important to transfer her books and albums on the art of Japan to IOS. The late Alexander Petrov, chief of economic history sector, did much to preserve the books on economic history, econometrics and modern economy that belonged to economists Glery Shirokov and Vladimir Yashkin. Such examples will make a long list if we visit all research departments of the Institute. These vivid examples of personal selflessness, are an important indicator of the expressed social desire to preserve the scholarly continuity in the unique academic school of Russian Oriental Studies, that holds a place of prominence on the forefront of world science.

Let us continue our tour of the IOS. Two personal libraries (Yuri N. Roerich and Prof. V. Gordlevsky) are included as structural units in the Institute of Oriental Studies in the form of memorial libraries by special decisions of RAS Presidium. Five thousand carefully selected rare scientific books in French, English and Eastern languages accompanied by the sources on Tibetology which for several decades were collected in India and had been brought to the IOS in 1960 by an outstanding Orientalist Yuri Roerich open up treasures of Indian civilization. This is not only a valuable humanitarian fund, but also an amazing spiritual monument, an evidence of the selfless devotion to scientific quest by the whole Roerich family. “Memorial library also contains over 250 rare Tibetan monastic woodcuts and a number of works (sumbums) in Tibetan languages collected by Roerich. The entire fund is represented I alphabetical and systematic catalogues, as well as in the general catalogue of the IOS library”[3]. The sources and philological materials of the library helped to accomplish the monumental research of Yuri Roerich. His thesaurus was compiled and published under the title of "Tibetan-Russian-English Dictionary with Sanskrit parallels". Memorial Library helped to shape up a public study community. Annual "Roerich Readings" -- that in 2016 have gathered for the 53rd time a variety of experts and enthusiasts from Russia and from abroad – are held here under the aegis of the Memorial library.

Academician V.A. Gordlevsky, who headed until his last days Sector of Turkey, had bequeathed his brilliant specialized library to the Institute Oriental Studies. "The Memorial Library funds contain ten thousand units of storage. This is mainly literature on the history Russian oriental studies, philology, ethnography

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[3] Guide to the library of the Institute of Oriental Studies (reader's note) Comp. A.I. Bendix. Moscow: Nauka, 1970. p. 25.

of Turkey and of the Turk speaking peoples. In addition to books, magazines, articles, the library contains photo albums, geographic atlases, reprints of scientific articles and a small ethnographic collection. The exposition comprises ethnographic and religious artifacts collected by V. Gordlevsky during his travels to the East. In addition to the scientific library there is also a section with fiction"[4] Sector of Turkey has been located in the premises occupied by the V. Gordlevsky's Memorial Cabinet-Library, since 1958. The fact that the work of the scholarly department has been conducted for decades inside the personal library of their mentor, teacher and leader had set up a very special atmosphere of academic rigueur, regional professionalism and strict adherence to area study specifics. The Sector was welcoming only narrow professional-Turkologists, "people accustomed to excessive politicization had no chance of taking root there"; "There was no competition in the Sector. The prevailing mood was that there are very few of us, experts, and the subject of our mutual interests – history, economy, culture of Turkey, is so vast, that there would be enough work for everyone. Newspapers and books coming from Turkey, were in a large deficit, so that book exchange and just the exchange of information about what is happening in the country, has always been in the Sector in the order of things"[5].

Having left the Roerich's and Gordlevsky's libraries on the third floor, we find ourselves in the premises of the alphabetic and systematic catalogs of the IOS library, where the on-duty bibliographers will always come to your assistance. Nearby – is the library subscription. Once, when the Institute and the library were in the old building of the Lazarevsky Institute in the Armenian side-street, researchers regularly lined up for subscription. Today, more than 1,000 regular readers can freely order books from library funds with over 600,000 books and 300,000 oriental publications, which are transferred on loan for long-term usage. About 500 students from the Institute of Eastern Countries (ISAA), Moscow State Lomonosov University, from Institute of Practical Oriental Studies and form other universities, together with over 100 post-graduate students working on Oriental topics, as well as 150 nonresident readers accepted on requests from other scientific and educational institutions of the country were regularly joining the IOS permanent readers-researchers. In the last two years there was a growing stream of new readers who had previously applied to the currently closed INION library. Since 1969 IOS library (perhaps the largest and diversified in the system of social sciences with about 30 specialized research libraries) has been structurally subordinated to INION RAS.

After the terrible February fire in the main building of INION, not only books and periodicals had perished, the fire had ruined the bulk of book processing facilities where the main work on registration and cataloging the new

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[4] Lee Yu.A., Oreshkova S. F. Sector of Turkey, Institute of Oriental Studies (to a half-century history of existence). Moscow: IOS RAS, 2009. p. 73

[5] Ibid. p. 31

acquisitions was done. Currently this activity has practically stopped. With the loss of card processing equipment, special software programs do not work. In the library of the Institute of Oriental Studies, RAS at best, one card arrives with great delay, whereas previously the library would get with the book at least a dozen of them. The cards are manually filled and punched with a hole puncher by bibliographers, buying with their own money the thick paper to replenish the card index, transliterating data in Oriental languages that they manage to translate with the help of expert readers. Who will appreciate their dedication, their honest, everyday struggle with the growing information entropy? To understand the scale of what is due to be done, I will simply list the languages of publications with which the IOS library operates: Arabic, Aramaic, Assam, Assyrian, Baloch, Bengali, Burmese, Braj, Vietnamese, Gujarati, Dari, Yiddish, Hebrew, Indonesian, Kannada, Kashmiri, Chinese, Korean, Kurdish, Khmer, Laotian, Malay, Malayalam, Manipuri, Mongolian (including in Latin script), Nepali, Oriyan, Punjabi, Persian, Prakrit, Pashto, Rajasthani, Sindhi, Swahili, Sundan, Tagalok (Philippines), Tibetan, Turkish, Tuigur, Urdu, Farsi, Hindi, Van, Japanese; Altai, Abazin, Abkhaz, Avar, Adzharian, Adyghian, Azerbaijani, Balkarian, Bashkiri, Byelorussian, Buryat, Buryat-Mongolian, Gagauz, Georgian, Dagestani, Dargin, Dungan, Ingush, Kabardino-Cherkessian, Kabardin, Kazakh, Kalmyk, Karakalpak, Karachayevsky, Kirghiz, Crimean-Tatar, Kumyk, Kurdish, Lakh, Lezghin, Mari, Moldovan, Mordovian, Nogai, Ossetian, Tajik, Tatar, Tuvan, Turkmen, Turkic, Uzbek, Uyghur, Ukrainian, Khakassian, Chechen, Chuvash and Yakut languages.

"We are yours" says Rimma Zharyokhina, director of the library and head of Library and Bibliographic Services Department subordinated to INION. At present INION is headed by a former employee of the Institute of Oriental Studies. We wish him to find the proper solutions necessary for the development of the IOS library and the Oriental studies.

Meanwhile, both scholars and librarians selflessly seek their own means to the salvage of the “Nautilus”. Where to begin this endeavor? With information and communication free unhampered flow of “containers of knowledge and storages of thought” into the seeking hands of professionals and general readers. For instance, it is necessary to find direct ways to the transfer of duplicates and already processed scientific editions that could free the scarce storage space. Excessive copies shall find those to whom they are interesting and needed. And already at the Institute of Russian History I see a table where researchers and employees leave the books with which they will no longer work. At the Institute of Europe, RAS I see the same book-release table, In the Institute of Philosophy there is a stand where books are offered to colleagues for free. In the Institute of Oriental Studies, about a hundred of such books are stored at subscription counter. In the pedagogical Ushinsky library, in Bogolubov public library you can get to the book-crossing shelves. Many other libraries follow the suit. There are now other places in town allotted for free book exchange. Such a

voluntary transfer of books to the new addressees is practiced not only by libraries and by individual book owners. Racks for free book access have been installed in Gorky recreation and Culture Park. Short stories of classics and contemporary writers, published in small book format can not only be easily read but also immediately discussed and returned for other users.

I see here a good prospect for the much needed off-line communication, for benevolent mentorship and for the accelerated personal development. As had said Fazil Iskander in his interview to the readers: "Life is like a ping-pong: you must constantly beat off someone else's idea, so that your own thought could be born." What is needed and is still lacking in the academic life - a quick almost instant feedback between the authors and their fellow researchers. Open pier reviews not in the form of the current pre-publication filter, but in the form of preprints and rapid new ideas exchange, some kind of press releases. In 1979, I launched in the IOS a photocopied feedback research journal "Abstracts" that would release in small-circulation new ideas in condensed form. Readers were asked to leave notes on the broad margins, and, having handed over such a feed-back product to the editors, they would immediately receive an additional free copy from the publisher. Now, after several decades of experience, this method of intensive dialogue is employed in a new interactive international study and educational platform "Diaversity". The mission of this “university of dialogue” is to foster and acknowledge individual talent by helping each time to actively recreate the mechanisms of culture. "And there are no mechanisms that by themselves would have ensured that beauty lasts, that freedom lasts, etc. Every time we should reproduce [them] with our own strenuous effort and at ones own risk. But there is an instrument that helps a person in this effort. Such help in an effort to be humane is the text (in the broadest sense of the word)"[6] Diaversity project participants are encouraged to put a new book a week for discussion, by highlighting those ideas that they may consider important to be discussed. After that, the dialogue includes a feedback by experienced professionals, major specialists who understand the importance of maintaining academic continuity and of the step by step uplift of complex scholarly research.

In live, direct communication with the texts, stored by libraries, in the necessary of dialogical mediations for any person, particularly - for the researcher-historian, we can hold on to the guiding thread conducive to an advanced new knowledge. It is important to upkeep a dialogue between the narrator and the reader, between the comprehended narrative and the researcher’s further quest. Such dialogue inspires. It gives uplift to the wings of consciousness and the flight of scientific thought can get far beyond the routine communication.

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[6] Mamardashvili M.K. Psychological topology of the path. M. Proust. "In search of lost time." St. Petersburg: Neva, 1997. p120

Bibliography

Zavadovskaya S.Yu. Yury Nikolaevich Zavadovsky (1909-1979). Biographical notes // Unknown pages of Russian Oriental studies. Issue. II. Moscow: Vost. Lit., 2004. 511 p.

Vinogradova T.I. Chinese illustrated newspapers from the collection of Academician V.M. Alekseeva // Society and the state in China. T. XILIII, ch. I. M .: IW RAS, 2013. 684 p.

Guide to the library of the Institute of Oriental Studies (reader's note) / Comp. A.I. Bendix. Moscow: Nauka, 1970. 54 pp.

Lee Yu.A., Oreshkova SF Sector Turkey Institute of Oriental Studies (to a half-century history of existence). Moscow: IG RAS, 2009. 95 p.

Mamardashvili M.K. Psychological topology of the path. M. Proust. "In search of lost time." St. Petersburg: Neva, 1997. 570 p.

Nina Tsvetkova[*]

China in ICT Goods Production and Exports

Electronics industry, ICT goods[**] production is one of innovation industries in development of which Asian countries have been successful.

The author's analysis of ICT goods production and exports based on UNCTAD and WTO statistics for 2000–2014 shows that in 2005–2014 China became the leader in ICT goods world exports[1].

Table 1

ICT Goods exports, by regions, 2000–2014 ($B)

	2000	2005	2010	2013	2014
World					
ICT goods	999.9	1375.3	1722.5	1921.6	1980.0
Computer equipment	367.2	474.1	499.6	515.1	530.0
Telecommunications equipment	154.7	218.7	333.4	461.8	496.0
Consumer electronics	105.7	182.0	229.6	205.7	204.4
Electronic components	321.9	392.3	574.3	657.7	667.5
Developing countries					
ICT goods	429.2	769.3	1160.0	1398.0	1441.5
Computer equipment	166.7	268.2	347.9	359.9	368.1
Telecommunications equipment	38.5	97.6	217.2	338.9	363.7
Consumer electronics	57.6	113.3	138.0	133.9	133.9
Electronic components	146.9	228.8	402.2	512.4	521.9
Developing countries: Asia					
ICT goods	389.2	722.5	1091.3	1328.6	1372.6
Computer equipment	152.8	254.8	330.7	340.0	344.9
Telecommunications equipment	28.6	85.1	196.1	318.8	345.8
Consumer electronics	47.9	99.4	113.0	112.3	111.4
Electronic components	142.6	224.3	397.9	506.0	517.9
Developing countries: East Asia					
ICT goods	216.8	493.5	831.0	1040.9	1076.4
Computer equipment	81.1	175.7	257.0	276.5	281.2
Telecommunications equipment	21.1	66.7	180.3	276.8	303.0
Consumer electronics	29.6	78.3	88.3	89.9	89.6
Electronic components	74.1	122.5	258.7	352.4	356.7

[*] Nina Tsvetkova PhD. (Economics), Senior Fellow Researcher, Center for the Study of Common Modern Eastern Issues, IOS RAS

[**] According to UNCTAD, ICT goods include such categories as computer equipment, telecommunications equipment, consumer electronics, electronic components and miscellaneous goods.

[1] Cvetkova N.N. Informacionno-kommunikacionnye tehnologii v stranah Vostoka : proizvodstvo tovarov IKT i IT-uslug. M.: IV RAN, 2016.

	2000	2005	2010	2013	2014
Developing countries: South-East Asia					
ICT goods	170.4	219.2	252.7	279.0	290.0
Computer equipment	71.3	77.6	72.7	62.8	62.9
Telecommunications equipment	7.4	14.9	13.4	37.6	40.8
Consumer electronics	17.4	17.3	22.6	20.1	19.4
Electronic components	68.4	101.1	137.7	152.8	160.6
Developed countries					
ICT goods	569.9	605.2	560.7	520.0	532.9
Computer equipment	200.4	205.8	151.4	154.5	159.6
Telecommunications equipment	115.9	121.0	116.0	122.1	131.5
Consumer electronics	48.0	68.6	90.9	70.5	69.1
Electronic components	174.7	163.4	171.7	144.9	145.1

Source: Bilateral trade flows by ICT goods categories, annual, 2000–2013; 2000–2014. Information Economy. http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx=15850 (access dates: 12.04.2015; 2.03.2016).

In 1996 world ICT goods exports reached $701 B. Exports from China amounted to $19 B and its share in world exports was 2.7 per cent only. Developed countries were leading exporters of ICT goods at that time: in the first place, the USA ($124 B; 17.7 per cent of world exports) and Japan (14.7 per cent). Asian countries were also important exporters: Singapore (3-d place; $68 B; 9.7 per cent), Hong Kong (5.4 per cent), Malaysia (5.3 per cent), South Korea (4.9 per cent)[2].

Table 2

ICT Goods Exports from China and Hong Kong (China), 2000-2014 ($B)

Goods	Exports ($B)						
	2000	**2005**	**2010**	**2011**	**2012**	**2013**	**2014**
China							
ICT goods	44.1	234.1	459.5	508.0	554.3	605.8	607.6
Computer equipment	17.9	109.1	196.9	209.0	218.5	214.1	215.9
Telecommunications equipment	5.9	33.1	106.6	134.1	153.9	175.8	196.3
Consumer electronics	11.3	46.8	64.7	66.0	69.3	70.0	71.1
Electronic components	6.6	25.5	74.1	82.2	96.1	130.4	107.3
Hong Kong (China)							
ICT goods	50.3	111.9	177.0	193.5	207.9	222.3	238.5
Computer equipment	14.7	34.5	35.4	40.0	45.2	42.8	43.6

[2] Information Economy Report 2007–2008. UN. N.Y.; Gen., 2007. P. 136.

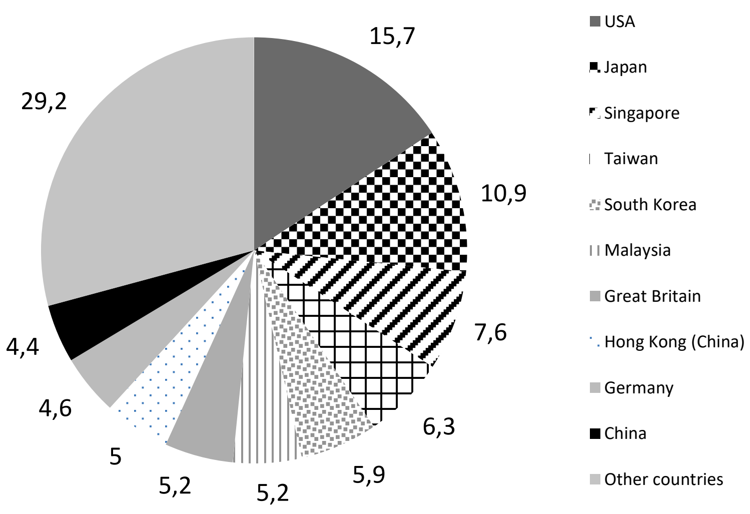
Telecommunications equipment	5.4	7.8	37.7	45.8	53.1	64.9	70.2
Consumer electronics	10.5	21.7	16.9	14.8	14.3	12.1	10.8
Electronic components	15.8	34.4	72.2	77.7	78.7	87.3	100.4

Source: Bilateral trade flows by ICT goods categories, annual, 2000–2013. Information Economy. http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx=15850 (access date: 12.04.2015; 2.03.2016).

In 2000 world ICT goods exports reached $999.9 B. China was tenth; its share of world exports amounted to 4.4 per cent ($44.1 B). Leading exporters were the same as in 1996: the USA ($156.7 B; 15.7 per cent of world exports), Japan (10.9 per cent), Singapore (7.6 per cent). Top ten exporters included also Taiwan (6.3 per cent), South Korea (5.9 per cent), Malaysia (5.2 per cent), Great Britain (5.2 per cent), Hong Kong (5.0 per cent), Germany (4.6 per cent) (Chart 1).

Chart 1

Leading ICT Goods Exporters: 2000 ***(per cent)***

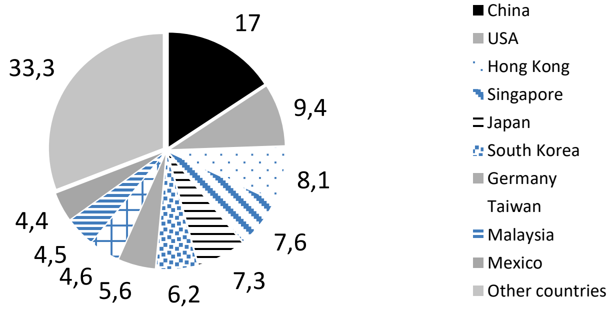


Sources to table 1, 2.

In 2005 China became the first world exporter of ICT goods (17 per cent of world exports). The USA moved to the 2nd place ($B 128.9; 9.4 per cent), Hong Kong (China) was 3rd (8.1 per cent). Top ten exporters also included Singapore (7.6 per cent), Japan (7.3 per cent), South Korea (6.2 per cent), Germany, Taiwan, Malaysia, Mexico (Chart 2).

Chart. 2

Leading ICT Goods Exporters: 2005 (per cent)

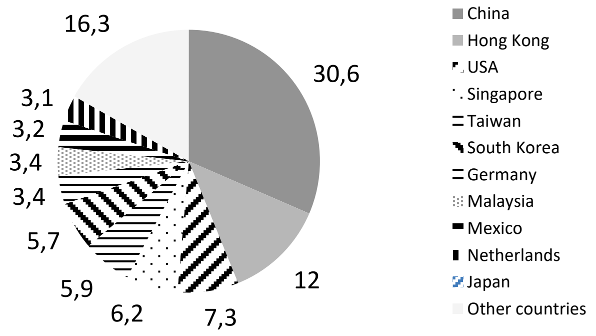


Sources to table 1, 2.
***33,3 per cent – other countries**

In 2014 ICT goods world exports amounted to $1980 B, it exceeded 2013 exports by 3 per cent only. China's share in the world ICT goods exports reached 30.6 per cent; the share of Hong Kong was 7.3 per cent (Chart 3).

Chart. 3

Leading ICT Goods Exporters: 2014 (per cent)



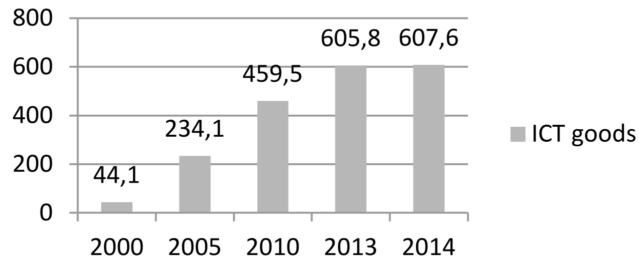
Sources to table 1,2.

In 1996–2000 China ICT goods exports increased from $19 B to $44.1 B, by 2.3 times, or by 131 per cent, in average 33 per cent per year. In 2000–2005 it increased from $44.1 B to $234.1 B, by 5.3 times, or by 431 per cent, in average by 86 per cent per year. In 2000–2005 ICT exports growth rate was 2.3 times superior to that of 1996-2000. In 2005 was first, but by 2014 China became the top exporter that left all other leading exporters far behind.

In 2005–2014 China ICT goods exports increased from $234.1 B to $607.6 B, by 159.5 per cent 1 per cent, but in 2005–2013 it grew by 158.8 per cent, that is, by 19.9 per cent a year, and in 2014, as compared to 013, only by 0.4 per cent. 2000–2005 were the period of most rapid growth of Chinese ICT goods exports (Chart 4).

Chart. 4

ICT Goods Exports from China, 2000–2014 ($B)

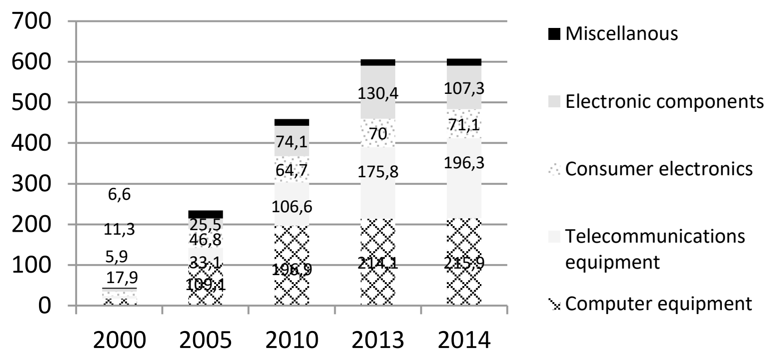


Source: Table 2.

Two categories of ICT goods prevail in China exports: computer equipment and telecommunications equipment. In 2010–2014 the growth of telecommunications equipment exports was most dynamic; its share in China ICT exports grew from 23.2 per cent to 32.3 per cent. The share of computer equipment decreased from 46.6 per cent in 2005 to 42.9 per cent in 2010 and 35.5 per cent in 2014 (Table 2, Chart 5).

Chart. 5

Structure of China ICT Goods Exports ($B)



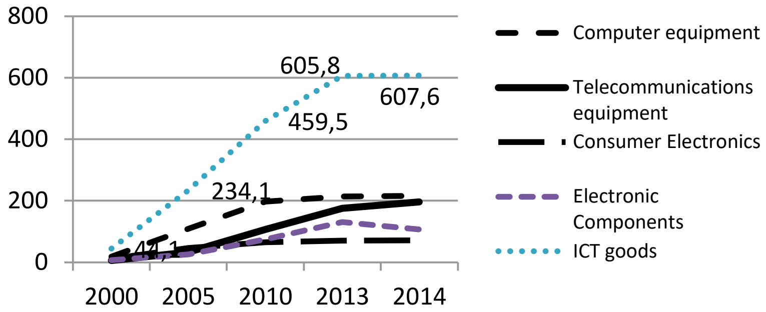
Source: Table 2.

The structure of China ICT exports is shown on Chart 5. Various growth trajectories of different categories of China ICT goods exports can be seen on

Chart 6: while in 2000–2010 most dynamic group was computer equipment, in 2010–2014 there was rapid growth in exports of telecommunications equipment (Chart 6).

Chart 6

Growth of different categories of China ICT goods exports, 2000–2014 ($B)

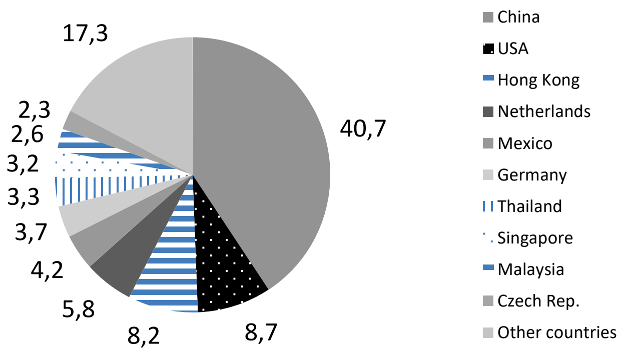


Source: Table 2.

ICT goods are in important part of China total exports: their share was 26 per cent in 2014, while in Hong Kong it was 45.5 per cent, in Taiwan – 35 per cent, Singapore – 30 per cent, Malaysia – 29 per cent, in South Korea – 20 per cent[3].

Chart 7

Leading Computer Equipment Exporters: 2014 (per cent)



Sources to Tables 1, 2.

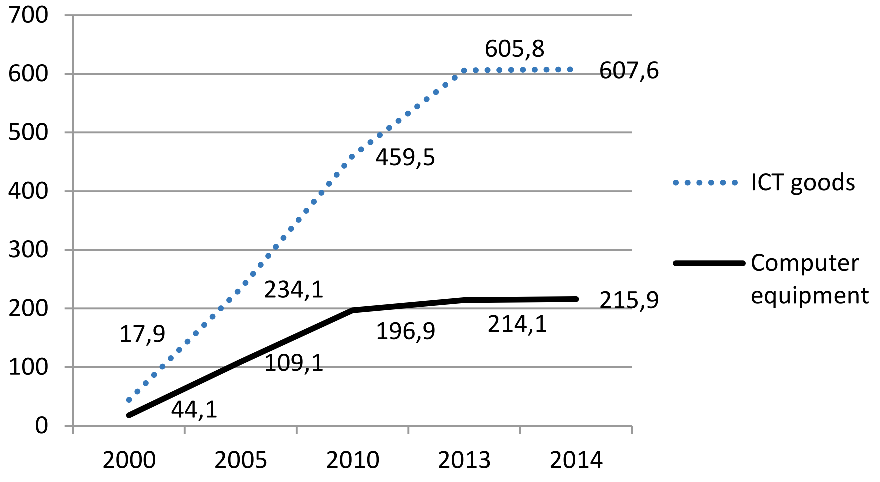
[3] Share of ICT goods as percentage of total trade, annual, 2000–2013. http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=15849 (access date: 1.06.2015).

In 2000–2014 world exports of computer equipment grew from $367.2 B to $530.0 B, but its part in world ICT goods exports diminished from 36.7 per cent to 26.8 per cent. In 2014 65.1 per cent of world computer equipment exports originated from developing countries of Asia (as they are defined in UNCTAD statistics, including Singapore, South Korea that have high per capita gross national income, but excluding Japan and Israel that are defined as developed countries). China was the first among exporters (40.7 per cent of world computer equipment exports). Other exporters in the top ten were the USA (8.7 per cent), Hong Kong (China) (8.2 per cent), the Netherlands, Mexico, Germany, Thailand, Singapore, Malaysia, Czech Republic (Chart 7). Two out of five computers on the world market are made in China.

China computer equipment exports increased from $17.9 B in 2000 to $214.1 B in 2013. In 2014 it amounted to $215.9 B, there was practically no growth. It should be pointed out that there was practically no growth of world exports either; world computer market was stagnant due to high market saturation and also due to competition from mobile devices and growing Internet mobile subscriptions in developing countries.

Chart 8

China ICT goods exports, including computer equipment exports, 2000-2014 ($B)

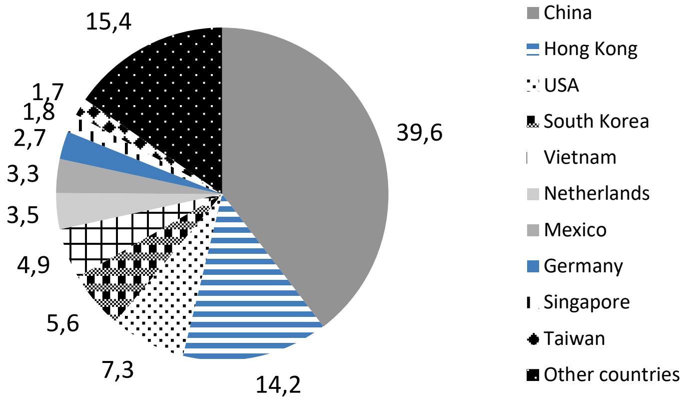


Source: Table 2.

The most dynamic group of world ICT goods exports in 2005–2014 was telecommunications equipment. In 2000–2014 it increased from $154.7 B to $461.8 B, and its share in world ICT exports grew from 15.5 per cent to 25.1 per cent. In 2014 69.7 per cent of world exports of telecommunications equipment originated from developing countries of Asia (Table 1).

Chart 9

Leading Exporters of Telecommunications Equipment, 2014 (per cent)

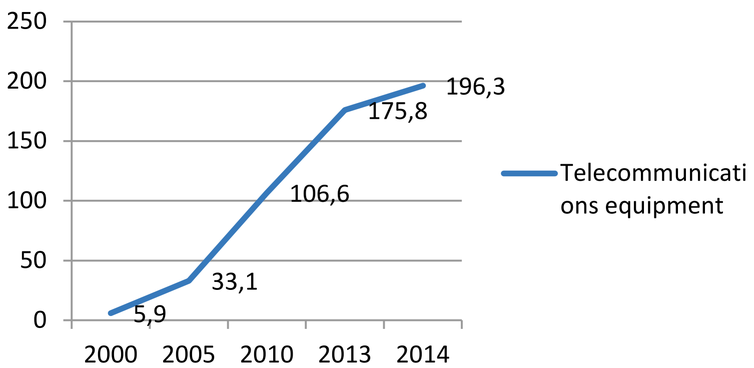


Calculations based on sources to Tables 1, 2.

China was uncontestable leader in world telecommunications exports (39.6 per cent of total) that left other exporters far behind. In top ten there were also Hong Kong (China) (14.2 per cent), the USA (7.3 per cent), South Korea (5.6 per cent), Vietnam (4.9 per cent), the Netherlands, Mexico, Germany, Singapore, Taiwan (Chart 9).

Chart 10

China Telecommunications equipment exports, 2000–2014 ($B)



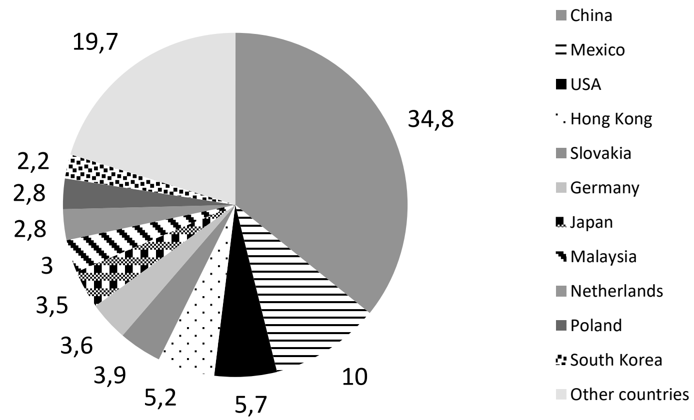
Source: Table 2.

In 2005–2010 China telecommunications equipment exports grew from $33.1 B to $106.6 B, almost 3-fold. It is at that period that we can say that

"mobile communications revolution" occurred, and mobile phones became widely spread in all countries of the world, with rare exceptions, such as North Korea. In 2010–2014 telecommunications equipment exports from China grew from $106.6 B to $196.3 B, almost twice, it is the period when smartphones became widely spread. Smartphone brand Samsung Galaxy is (or was before well-known accidents in 2016) popular in the world. But on the label and in instructions you can see that Samsung gadgets are "made in China" or in Vietnam (and where are the batteries for the notorious Samsung Note 7 made?). Mobile phones with brands HTC or Acer tablets, Asus netbooks (companies from Taiwan), or Sharp television sets – all of them are "made in China". Apple iPhones and iPads are also assembled in China.

Chart 11

Consumer electronics world exports, 2014 (per cent)

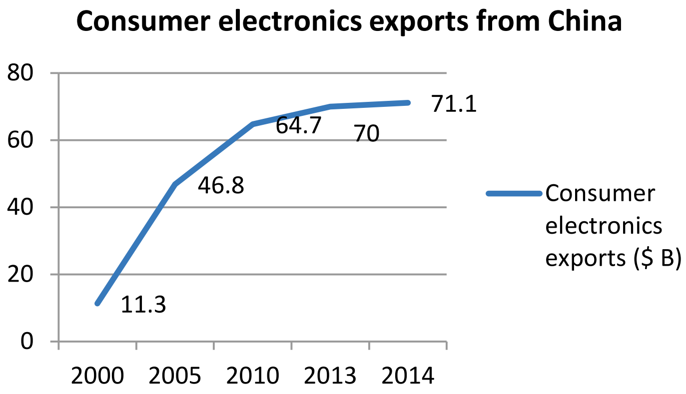


Calc. on sources to Tables 1, 2.

The growth of world consumer electronics exports was rather slow. In 2000–2013 it increased from $105.7 B to $205.7 B, and in 2014 it even decreased to $204.4 B, its share in ICT exports staying almost unchanged: 10.6 per cent in 2000 and 10.3 per cent in 2014. In 2014 54.5 per cent of consumer electronics exports originated from developing countries of Asia. China was the first exporter with 34.8 per cent of world exports. Other leading exporters were Mexico (10.0 per cent), the USA (5.7 per cent), Hong Kong (China) (5.2 per cent), Slovakia (3.9 per cent), Germany (3.6 per cent), Japan (3.5 per cent), Malaysia (3 per cent), the Netherlands and Poland (2.8 per cent each). Most dynamic consumer electronics exports from China were observed in 2000–2005: it increased from $11.3 B to $46.8 B, by 4.5 times, it grew to $64.7 B in 2010, and after that stayed almost at the same level (Chart 12).

Chart 12

China consumer electronics exports, 2000-2014 ($B)



Source: Table 2.

ICT exports from China grew immensely during past 20 years. But a significant share of ICT goods manufactured in China is sold on internal market. In 2014 400 million smartphones were sold on China market, it is almost 1/3 of smartphones sold in the world (1.3 B units).

By 2014 China became the first industrial economy in the world. In 2014 China gross domestic product (GDP) by PPP (purchasing power parity) exceeded the USA GDP by PPP. Value added produced in China manufacturing industry in 2014 amounted to $2857.0 B (23.8 per cent of world value added in manufacturing industry, $11979.0 B), while in the USA it was $2068.1 B (17.2 per cent of the world total), in Japan $850.9 B (7.1 per cent) and in Germany $787.5 B (6.6 per cent). In 2000 China was fourth by value added produced in manufacturing industry ($384.9 B) in the world after the USA ($1510.2 B), Japan ($997.9 B) and Germany ($400.7 B)[4].

In 2005 Japan (20.5 per cent of total value added in the industry) was first by value added in radio-, television, telecommunication equipment manufacturing, it was followed by the USA (20.2 per cent), China (13.6 per cent) and Great Britain (9.9 per cent). In 2011 China became first (21.8 per cent of total value added in the industry) by value added in radio-, television, telecommunication equipment manufacturing, the USA were second (16.8 per cent), Japan was third (15.5 per cent), followed by South Korea (12.8 per cent), and Taiwan (11.3 per cent).

[4] Manufacturing, value added (current US$).
http://data.worldbank.org/indicator/NV.IND.MANF.CD /countries?display=Chart;
http://data.worldbank.org/indicator/NV.IND.MANF.CD/countries/1W?display=default
(access date:10.05.2015); WDI: Structure of manufacturing
http://wdi.worldbank.org/table/4.3# (access date: 8.10.2016).

In 2005 the USA were first by value added in computer and office computer and office equipment manufacturing (27 per cent of total value added in the industry), China was second (19.9 per cent), Japan third (14.5 per cent), Taiwan fourth (6.1 per cent). In 2011 China became first, it produced 38.8 per cent of total value added in computer and office equipment manufacturing in the world, USA moved to second rank (23.7 per cent), Japan was third[5].

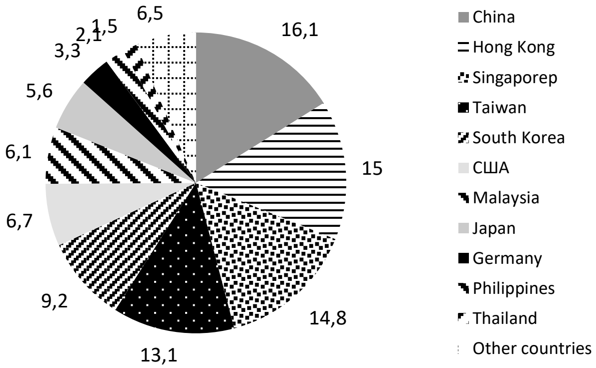
China: exports and imports of ICT goods and electronic components

Growth of international trade in electronic components proves intensification of international division of labor. International division of labor can be at the same time an intra-firm division of labor when different components are produced by affiliates of the same TNC in different countries; they can be also produced by the company subcontractors working under manufacturing contracts.

In 2000 top ten exporters of electronic components for ICT goods (EC) included the USA ($66.1 B; 20.5 per cent of world exports), Japan (14.2 per cent), Singapore (11.0 per cent), Taiwan (8.1 per cent), South Korea (7.9 per cent), Malaysia (5.7 per cent), Hong Kong, Germany, Thailand (2.2 per cent). China was tenth, with 2.1 per cent of world exports.

Chart 13

Leading exporters of electronic components, 2014 (per cent)



Calculated on data from sources for Tables 1, 2.

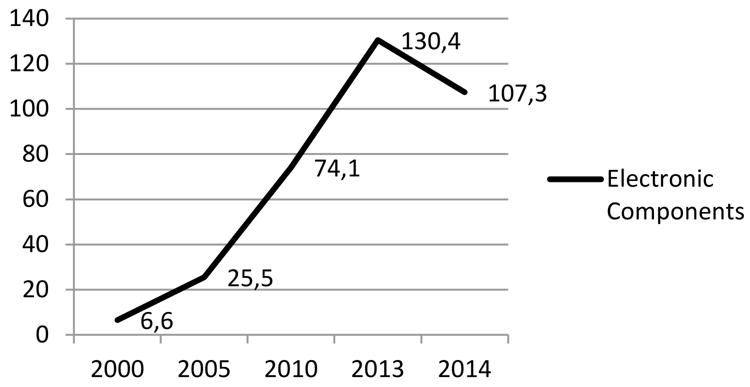
By 2010 situation on electronic components world market changed cardinally: 2/3 of electronic components exports originated from developing countries. In 2014 China was first (16.1 per cent of world exports); in 2013 the share was

[5] Industrial Development Report 2013. UNIDO, 2013. P. 177.

higher: 19.8 per cent. Top ten exporters also included Hong Kong (China) (15.0 per cent), Singapore (14.8 per cent), Taiwan (13.1 per cent), South Korea (9.2 per cent). The USA (6.7 per cent) moved to sixth rank and Japan, to eighth rank (5.6 per cent). Among leading exporters there were also Malaysia, Germany, Philippines (2.1 per cent), and Thailand (1.5 per cent). The center of electronic components production moved to East and South-East Asia.

Chart 14

China Electronic components exports, 2000-2014 ($B)



Source: Table 2.

China was the world leading electronic components exporter in 2014, but they constituted only 17.7 per cent of its ICT goods exports. China specializes mainly in exporting finished ICT goods; it has assembly operations and complete cycle electronics manufacturing.

Table 3

ICT goods and electronic components (EC) exports from China and Hong Kong by destination, 2000; 2013 ($B)

Exports to	China				Hong Kong			
	2000		2013		2000		2013	
	ICT goods	EC	ICT goods	EC	ICT goods	EC	ICT goods	EC
World	44.1	6.6	605.8	130.4	50.3	15.8	222.3	87.3
South-East Asia	4.3	1.1	40.4	11.7	4.8	1.7	11.5	3.3
Singapore	2.1	0.5	12.8	5.2	2.6	0.9	3.2	1.4
Malaysia			7.1	3.0	0.9	0.4	1.6	0.5
Vietnam			7.5	1.3	…		1.6	0.4
Thailand			5.6	0.8	0.5	0.2	2.6	0.7
Philippines			2.1	0.6	0.6	0.2	1.4	0.3

East Asia	12.6	3.3	244.5	96.4	22.4	9.7	157.2	76.6
Taiwan	0.8	0.3	16.0	9.5	2.3	1.5	5.1	2.8
South Korea	1.5	0.6	32.3	6.4	2.0	1.1	4.6	2.3
China	X	X	X	X	17.9	7.1	146.9	71.5
Hong Kong (China)	10.2	2.4	195.7	80.5	X	X	X	X

Source: Bilateral trade flows by ICT goods categories, annual, 2000–2013. Information Economy. http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx=15850. (access date: 12.04.2015).

In 2000 China ICT goods exports amounted to $44 B, the share of countries of East and South-East Asia (ESEA) being 38.3 per cent, with Hong Kong as priority destination. 2/3 of China electronic components exports in 2000 ($6.6 B) went to ESEA; including 36.4 per cent to Hong Kong. China exported mainly finished ICT goods; the share of EC in its ICT exports in 2013 was 21.5 per cent. Main export markets for EC from China in 2013 were East and South-East Asia countries (82.9 per cent), with 61.7 per cent exported to Hong Kong. Other directions of China EC exports were Taiwan, South Korea and Singapore (Table 3).

EC exports from Hong Kong in 2000 amounted to $15.8 B, main export markets were East and South-East Asia countries (72.2 per cent), China (44.9 per cent) in the first place, and also Taiwan (9.5 per cent), South Korea, Singapore and Malaysia (7.0 per cent each). In 2013 EC exports from Hong Kong amounted to $87.3 B and major part of it ($71.5 B) went to China.

In 2000 7.1 per cent of EC exports from South Korea, 3.1 per cent from Taiwan and Singapore were directed to China, and only in Hong Kong the share of exports to China was high (44.9 per cent). In 2013 China became a priority destination of EC exports not only for Hong Kong ($71.5 B, 81.9 per cent of EC exports), but also for South Korea ($23.1 B; 39.7 per cent of EC exports), Taiwan ($18.9 B; 24.1 per cent), Singapore ($18.3 B; 20.1 per cent). EC exports to China from the USA in 2013 amounted to $4.8 B and from Japan to $10.4 B only. 37.1 per cent of mutual EC exports of six Asian leading exporters of ICT goods: China, Hong Kong (China), South Korea, Taiwan, Singapore and Malaysia went to China and 37.6 per cent to Hong Kong. If re-exports are not taken into consideration (e. g., in WTO statistics), the share of Hong Kong in ICT goods exports is reduced dramatically.

We can state that an intra-regional division of labor in ICT goods production has been formed in East and South-East Asia, in particular between these six countries (and territories): China, Hong Kong, South Korea, Taiwan, Singapore and Malaysia. In 2013 79 per cent of their EC exports were mutual exports[6]. The countries export electronic components mainly to China and

[6] Bilateral trade flows by ICT goods categories, annual, 2000–2013; 2000–2014. Information Economy. http://unctadstat.unctad.org/wds/ TableViewer/tableView.aspx=15850 (даты обращения: 12.04.2015).

Hong Kong, the latter serves as a re-export center. Taiwan, South Korea, Singapore are mainly exporters of electronic components, but they also receive important flows of EC.

If we deduct exports to Hong Kong ($195.7 B) in 2013 from China ICT goods exports ($605.8 B), Chinese exports will amount to $410.1 B and the exports from Hong Kong ($223.2 B) minus its exports to China ($146.9 B) will amount to $75.3 B only. But in this case, total world ICT goods exports would be equal to $1579.0 B; developing Asian countries exports to $986.0 B; their share in world exports to 62.4 per cent, and the share of China to 26.2 per cent; the share of China with Hong Kong in world exports representing 31.0 per cent. Even if Hong Kong factor is taken into account, China, with Hong Kong or without it, remains the world leader (calc. using data from Tables 1, 2, 3).

The division of labor between China, on the one hand, and Taiwan, South Korea, Singapore, on the other hand, is based on comparative advantages, workforce in China being cheaper than in these countries. But there is also the division of labor between Taiwan, South Korea, Singapore, which is based not on comparative advantages, but on economy of scale factors, and in case cost of Chinese labor increases, China can also participate in such kind of division of labor (it exists in European Union countries, to be more precise, between the old EU members – France, Belgium, Germany, not between France and Romania).

Table 4

ICT goods and electronic components exports and imports: China and Hong Kong, 2000; 2005, 2013 ($B)

	2000			2005			2013		
	exports	imports	balance	exports	imports	balance	exports	imports	balance
China									
ICT goods	44.1	45.5	–1.4	234.1	166.8	+67.3	605.8	400.7	+205.1
EC	6.6	22.5	–15.9	25.5	101.6	–76.1	130.4	275.7	–145.3
Hong Kong (China)									
ICT goods	50.3	59.6	–9.3	111.9	114.7	–2.8	222.3	240.9	–18.6
EC	15.8	21.5	–5.7	34.4	45.6	–11.2	87.3	104.1	–16.8

Source: Table 2, 3.

In 2000 China ICT goods imports ($45 B) exceeded exports ($44 B) by 2 per cent. Negative balance of trade in EC was not compensated by finished goods exports. In 2005 ICT goods exports exceeded imports by 40 per cent and in 2014 by 50 per cent. Hong Kong was a net ICT goods importer as it specializes in re-exports trade.

Table 5

Imports of ICT goods, including EC imports, to China and Hong Kong, by origin 2013 ($B, per cent)

	Imports					
	China			Hong Kong (China)		
	ICT goods	EC		ICT goods	EC	
	$B	$B	%	$B	$B	%
All countries	400.7	275.7	100	240.9	104.1	100
China	X	X		128.3	32.6	31.3
Taiwan	88.5	80.9	29.3	25.4	20.2	19.4
South Korea	73.9	54.4	19.7	11.8	8.4	8.1
Hong Kong (China)	97.4	38.0	13.8	X	X	X
Malaysia	36.2	32.2	11.7	8.0	6.0	5.8
Singapore	8.8	7.2	2.6	21.2	18.1	17.4
Philippines	11.7	6.5	2.4	4.2	3.0	
Thailand	11.7	3.8		5.8	2.2	
Vietnam	6.6	2.8		3.4	0.1	
Japan	25.5	18.8	6.7	11.9	6.2	6.0
USA	18.2	15.4	5.6	9.2	3.7	
Germany	4.6	3.4				

Source to Table 3.

In 2013 electronic components constituted 68.8 per cent of China ICT goods imports. 29.3 per cent of China EC imports originated from Taiwan, 19.7 per cent from South Korea; 13.8 per cent from Hong Kong, 11.7 per cent from Malaysia; 6.7 per cent from Japan; 5.6 per cent from the USA; 2.4 per cent from the Philippines.

Imports of ICT goods to Hong Kong reached in 2013 $240.9 B, including EC imports of $104.1 B (43.2 per cent of total ICT goods imports). 53 per cent of Hong Kong imports originated from China, ¾ of exports from China being finished products and 1/4 electronic components. Hong Kong imported from Taiwan, Singapore, South Korea mainly electronic components. 31.3 per cent of electronic components imports to Hong Kong originated from China, 19.4 per cent from Taiwan, 17.4 per cent from Singapore.

Main destinations of ICT goods and, in particular EC exports, from China and sources of ICT goods imports, in particular of EC imports, to China show the way global value chains are functioning. Main sources of EC imports to China are countries of East and South-East Asia: Taiwan, South Korea, Malaysia and also Hong Kong. EC exports from China are inferior to its EC imports. China EC exports are directed mainly to its special autonomous region Hong Kong. Most part of global value chains are, as a matter of fact, confined to the region of East and South-East Asia, excluding the starting point (R&D, design, patents, copyright) in the country of origin of the technology (the USA,

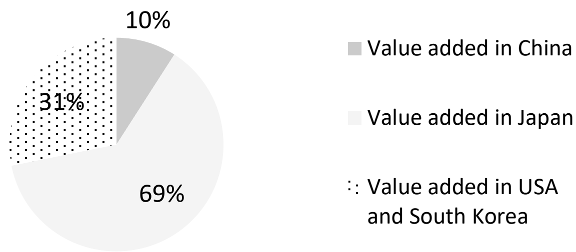
Japan), and terminal points (marketing, after sale technical support and maintenance,) in different countries-consumers.

A researcher Kate Davies studies how Western cities increasingly depend on vast global networks to survive. Along with fellow 'speculative architect' Liam Young, she runs *Unknown Fields*, the infamous nomadic design studio that explores the hidden zones of production and distribution that keep the world running. She's brought a small group of journalists and researchers to Shenzhen as part of "an expedition to ride the global supply chain backwards to its source". "We arrived here by container ship, and after two weeks of travelling we'll end up at rare earth mines and refineries in Inner Mongolia, to see firsthand how all that electronic crap is dug out of the ground", says journalist Tim Maughan who took part in the group visits[7]. The group visited enterprises of various types in Shenzhen

According to UNCTAD, in 2010 the highest share of imported value added in exports was observed in computer equipment industry (45 per cent), in consumer electronics it amounted to 36 per cent and in oil industry to 5 per cent only[8].

Chart 15

Value added in iPhone cost (ex-plant).



Source: Global Value Chains in a Changing World. Ed. by D. K. Elms and P. Low. WTO, Fung Global Institute and the Temasek Foundation, 2013. P. 86.

At the end of the 2000-ies, value added in China amounted to 10 per cent of ex- plant cost of an (outdated by now) iPhone model assembled in China ($144), the share of value added in Japan being 69 per cent, and in USA and South Korea 31 per cent (Chart 15).

But for various other ICT goods the situation is different. According to WTO (2016), in 2011 the share of foreign value added in computer equipment and electronics exports amounted to 55 per cent in China, 40.1 per cent in Singapore, 42.2 per cent in South Korea, 44.6 per cent in Taiwan, 66.8 per cent

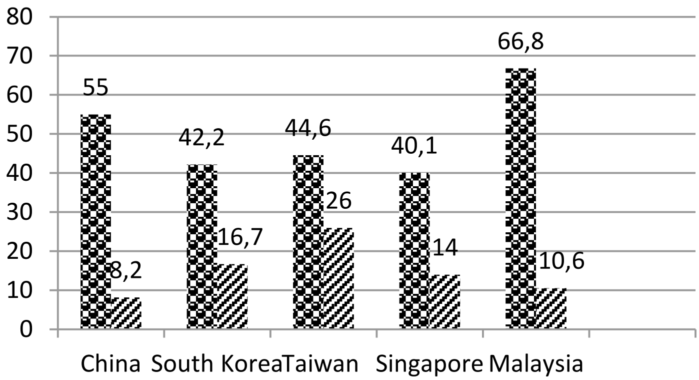
[7] The Changing Face of Shenzhen, the World's Gadget Factory. Written by Tim Maughan. August 19, 2015. http://motherboard.vice.com/read/beyond-foxconn-inside-shenzhen-the-worlds-gadget-factory

[8] World Investment Report, 2013, U.N., N.Y.; Gen., 2013. P. 128

in Malaysia. That means that the share of value added produced in the country was 33.2 per cent in Malaysia, 45 per cent in China (it is different from 10 per cent for iPhone), 55.4 per cent in Taiwan, 57.8 per cent in South Korea, 59.9 per cent in Singapore. Another indicator of involvement in global value chains is a part of the industry exports that undergoes further processing in global value chains in other countries: 26 per cent for Taiwan, 16.7 per cent for South Korea, 14 per cent for Singapore, while for China it was 8.2 per cent and for Malaysia 10.6 per cent (Chart 16).

Chart 16

Global value chains in computer equipment and electronics exports in East and South-East Asia, 2011 (per cent).



1) Foreign value added in exports
2) Share of industry exports in GVC in third countries

Source: WTO. Trade in Value Added and Global Value Chains. https://www.wto.org/english/res_e/statis_e/miwi (access date: 20.03.2016).

Integration into global value chains was one of main factors of success in ICT goods production and exports for China.

ICT goods production: foreign direct investments (FDI) and contract manufacturing

At the end of 1960-ies labor intensive industries, including electronics industry, started migration from developed countries to developing countries of Asia. TNCs began locating their affiliates in South Korea, Hong Kong, Singapore, Taiwan, Malaysia, Thailand, Philippines.

In the 1980-ies electronics industry production and manufacturing in general started migration to China. In 1980–1990 FDI book value in developing countries increased from $108.1 B to $529.6 B, by 3.3 times. In China it in-

creased from \$0.06 B to \$20.7 B, by 345 times, in Hong Kong – from \$1.7 B to \$201.7 B, by 119 times[9].

At that period main investors to China were not TNCs from developed countries, but overseas Chinese and their companies. According to Russian researchers L. Gudoshnikov and K. Kokarev, in total FDI inflow to China in 1985-1990 on average 60.7 per cent, in 1991–1995 58.7 per cent, and in 1996 49.5 per cent originated from Hong Kong. In the province of Guangdong the share of Hong Kong in FDI inflow varied from 93.7 per cent in 1986 to 69.8 per cent in 1990 г. and 78.3 per cent in 1995. The number of employees of affiliates with Hong Kong investors' participation in 1998 was from 4 million to 5 million persons[10].

In 1990-ies investors from developed countries went to China also, and rapid FDI growth continued. In 1990–2000 FDI book value in developing countries increased from \$529.6 B to \$1736.2 B, by 3.3 times. In China it increased from \$20.7 B to \$193.3 B, by 9.3 times, in Hong Kong — from \$201,7 B to \$455,5 B, by 2.3 times.

A significant part of FDI inflow to China was directed into ICT industry. In 2005 in China there were 3000 FDI projects in computer, telecommunications, electronic equipment for the total amount of \$21 B. Dell, Hewlett Packard, Motorola, Nokia and other TNCs created their affiliates in China. In total, there were 3384 foreign companies: they accounted for 21 per cent of assets, 30 per cent of sales, 20 per cent of profits and 16 per cent employed in the industry in 2005[11].

In 2014 Hong Kong and China remained main centers of attraction for FDI in South, South-East and East Asia: FDI book value in Hong Kong reached \$1549.8 B; 31.2 per cent of total FDI book value in the region, in mainland China it amounted to \$1085.3 B; (21.8 per cent)[12].

Motivation for locating labor-intensive industries in China still exists. Minimum wages in the USA at the end of 2000-ies amounted to \$5 per hour, average wages – \$15 per hour; it corresponded to about \$900 and \$2600 per month. According to Bloomberg, wages in manufacturing industry in 2014 were \$450 per month in Shanghai, \$400 in Guangzhou, \$340 in Shenzhen. In Ho Chi Minh City and Hanoi they were only \$150 per month; that creates an important competition for China[13].

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[9] Cvetkova N.N. Informacionno-kommunikacionnye tehnologii v stranah Vostoka : proizvodstvo tovarov IKT i IT-uslug. M.: IV RAN, 2016. p. 20-21

[10] Gudoshnikov L.M., Kokarev K.A. Gonkong — osobaja avtonomija Kitaja. M., 1999. P. 124,170-171.

[11] Information Economy Report 2007–2008, U.N., N.Y.; Gen., 2007. P. 125.

[12] World Investment Report, 2016, U.N., N.Y.; Gen., 2016. P. 43.

[13] Mirovaja jekonomika i mezhdunarodnye jekonomicheskie otnoshenija. Pod red. A.S. Bulatova, N.N. Livenceva. M., 2008. S. 267; China Is Set to Lose Manufacturing Crown.

Besides FDI, non-equity forms of international production (NEMs) also played an important role in migration of electronic industry to Asian countries. In 1970-ies export goods were produced not only by TNC affiliates, but also by local enterprises who worked under subcontracts with TNCs, long-term contracts on goods purchases, under which subcontractors are provided with specifications (technology), materials, equipment; quality of goods that bear the principal's brand is under strict control of the principal. Migration of industrial enterprises from Hong Kong to Guangdong province was made in such a way that the enterprises moved with a network of their relationships with principals: Western and Japanese transnationals. Today Asian countries are involved in global value chains in electronics not only through FDI, but also through contract manufacturing.

In world electronics exports, companies with NEMs accounted for about a half in 2010, according to UNCTAD[14]. World Investment Report 2011 gives a list of 10 leading companies working under contract manufacturing in electronics industry: they were 5 companies from Taiwan, 1 from Hong Kong, 1 from Singapore, 2 from the USA, 1 from Canada.

Hon Hai (Foxconn) from Taiwan was first among companies working under manufacturing contracts. It is one of the biggest electronic companies in the world. In 2014 its sales reached $141 B. In 2012 it had 1.29 million employees and 62.6 per cent of them worked not in Taiwan, but abroad, mostly in China where Hon Hai has about 20 factories. Hon Hai affiliate in Shenzhen was opened in 1988.

Apple products: iPhones and iPads – are expensive and prestigious, but they are assembled by workers receiving low wages and living in employees dormitories that look as military barracks for soldiers with two-level beds. A series of photos of such a dormitory at a factory of Pegatron company from Taiwan in China, which also assembles iPhones for Apple, were posted recently in Internet by Human Rights Watch. The level of wages at the factory is 3264 yuan (CNY); that is equal to about 31600 rubles. But wages may exceed this level in case of working overtime; sometimes it may last 90 hours per month[15].

Flextronics Corp. from Singapore was second among companies working under contract manufacturing system in electronics. It also has factories in China as well as other electronic manufacturing services providers from the list: Quanta, Wistron and Inventec companies from Taiwan. Quanta's clients are Dell, Hewlett Packard, Toshiba, Fujitsu, Siemens, Lenovo, Acer. Wistron performs manufacturing contracts for Dell, Microsoft, Lenovo, Hewlett

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http://www.bloomberg.com/news/articles /2015-04-29/ china-is-set-to-lose-manufacturing-crown (access date: 30.04.2015).

[14] World Investment Report 2011. P. 154 –156. Здесь и далее данные о компаниях взяты из: World Investment Report 2011, Annex, Table IV.1; http://www.forbes.com/global2000/list/#tab:overall (access date: 1.06.2016).

[15] https://hi-tech.mail.ru/news/pegatron-photo/?frommail=1 (access date:1.09.2016).

Packard, Acer. Inventec works for the same clients and also for Siemens, Fujitsu, Toshiba. All these providers of electronic manufacturing services have their manufacturing facilities in China.

American Jabil Corporation performs manufacturing contracts for Alcatel Lucent, Intel, Philips; it has factories in Shanghai, Chengdu, Yantai in mainland China and in Hong Kong[16]. Hong Kong company TPV clients are Dell, HP, IBM, Mitsubishi Electric. 69 per cent of products are manufactured under contracts (ODM, Original Design Manufacturing), and other 31 per cent are OBM (Own Brand Manufacturing): monitors for computers AOC Topview, television sets LDC. TPV manufacturing base is mostly located in mainland China. Canadian company Celestica and American Sanmina SCI (No. 10 in providers list), which works under contracts with IBM, Lenovo, HP, Cisco, Dell, Nokia, Caterpillar, also have factories in China[17]. Western TNCs and TNCs from Asian countries, providers of electronic manufacturing services, all of them have their manufacturing base in China[18].

ICT goods production in China: types of manufacturers

There are different types of ICT goods manufacturers in China: affiliates of TNCs from the West and of Asian TNCs, national Chinese companies: enterprises of public and private sectors. There are also a great number of small and medium-scale enterprises. Some startups are rapidly transformed into transnationals: recent example of Xiaomi.

One can get an idea of multi-level structure ("multi-structural economy") of Chinese electronics industry judging by an example of one of the main centers of electronics in China – Shenzhen. Before it was given SEZ status in 1979, Shenzhen was a fishing port with a population of 300,000. Now it is a city of over 15 million and "it continues to swell, constantly drawing workers from China's countryside: the children of subsistence farmers hoping to carve out a better life for themselves in the city". "It's where all the electrical crap we buy comes from," Kate Davies, a researcher and architect who studies extreme places, says: "The cheap toys, that box of chargers and adapters that you have, that you've no idea what they're for anymore, the cemetery of old phones in your kitchen drawer…". "Shenzhen is one of those points on the planet where the world condenses in high density into one place, it's an artifact of the contemporary global supply network that weaves matter and displaces earth across the planet"[19].

[16] http://www.jabil.com/ (access date: 1.10.2015).

[17] World Investment Report 2011. P. 219.

[18] Cvetkova N.N. TNK v stranah Vostoka: PII i global'nye proizvodstvennye seti // Vostochnaja analitika. Ezhegodnik 2012 g. M.: IV RAN, 2012.

[19] The Changing Face of Shenzhen…

In Shenzhen there are affiliates of Western TNCs: Hewlett Packard, TNC from Asian countries: Samsung Electronics and of course Foxconn (Hon Hai) from Taiwan. “Mention Shenzhen to most people, and they’ll probably think of the vast Foxconn manufacturing plant that churns out high-end phones, tablets, laptops, and gaming consoles for the likes of Apple, Microsoft, Dell, and Sony. The size of a small city – with an estimated half a million employees – Foxconn’s Shenzhen plant gets media attention not just because of its vast scale and brand-name clients, but also because of the numerous reports of atrocious working conditions it has engendered, and the stories of employee suicides, protests, and even riots within the campus walls”[20].

By 2016 Foxconn has got a newly built manufacturing facility for the iPhones in Zhengzhou, China. And the plant manufactures about 200 000 iPhones per day. 70 per cent of the production of iPhones now comes from Foxconn’s Zhengzhou plant. The iPhones that are manufactured in Foxconn’s Zhengzhou plant are shipped worldwide. In the interview, one of the Foxconn workers in Zhengzhou said “she receives two 15-minute paid rest breaks at noon and afternoon, one 50-minute meal period in each workday in which she work at least eight hours. And she earns 2 000–3 000 yuan ($316 – $474) per month. So, Foxconn’s Zhengzhou plant is now the main manufacturing plant for iPhone production line, and Foxconn has been working with the Chinese city of Zhengzhou to make the factory the largest smartphone production facility in the world. Speaking of the workforce at the facility there, there are more than 110,000 workers after large scale recruitment in January 2012. Moreover, some of the newly recruited workers are relocated from Foxconn’s Shenzhen plant. Foxconn’s strategy is to move production from Shenzhen to inland territories where costs are lower and it can pay its peasant workers lower wages, as well as benefiting from tax breaks from city authorities. What’s more, Shenzhen had become notorious for its spate of suicides and accusations of poor working conditions and enforced overtime[21].

Foxconn is alsoopening a new “technology tourism factory” in Jiangsu, China, designed to give outsiders a peak into a (carefully managed) version of the Foxconn working experience. The factory will allow visitors to experience IT product manufacturing, Foxconn style. It will consist of two sections, with the front part being an experience center where people can test the latest Foxconn-made gadgets, and the back part featuring a manufacturing demo and retail center. There will also be a home theater, nursery room, and kids’ playground[22].

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[20] The Changing Face of Shenzhen…

[21] http://micgadget.com/26325/70-of-iphone-production-now-comes-from-foxconns-zhengzhou-plant/

[22] Get the Foxconn experience with new tourist factory. By Luke Dormehl . January 19, 2016 http://www.cultofmac.com/407687/get-the-foxconn-experience-with-new-tourist-factory/

In Shenzhen, besides foreign transnationals, biggest Chinese electronic companies: ZTE, Huawei, TCL also have their affiliates. Kate Davies and her group ("voyage along the supply chain"), including Tim Maughan, whose article is cited here, visited some electronic enterprises in Shenzhen, large and medium, among them TCL and Yuwei. "TCL LCD Industrial Park is one of the world's biggest television manufacturing plants. It takes about an hour to get here from Shenzhen's financial center. TCL LCD Industrial Park is a fraction of the size of Foxconn, but it's still industrial manufacturing on a scale that has become alien in the West. TCL makes 18 million TVs a year, as well as Blu-ray players, all labeled under a number of different brands". In 2004 TCL acquired RCA, first company that started manufacturing television set in US. There is a museum of television in the Industrial park.

"We get a glimpse of the factory floor as we walk past the windows looking down on one of the production lines", T. Maughan says. The premises are clean, with a lot of light and high ceilings. "The production line appears semi-automated; there's a dozen or so young workers wearing t-shirts with QR codes on their backs interacting with various machinery. They work a minimum of one eight hour shift a day, but can do a second if they want (they say, this is optional) for six days a week. In return, they get paid, on average, about 3,000 yuan, or roughly $484, a month". "We're invited to have lunch in one the factory's three canteens: a huge three-level food court complex. Each canteen serves 3,000 workers a day. Watched over by CCTV cameras, hordes of teenage employees in short sleeved uniforms – color-coded depending on which line they work sit at fast-food restaurant style tables. Everyone is over 16; many appear in their early 20s". TCL is now also outsourcing manufacturing to other nations, namely to Poland (it has 14 Special Export Zones, SEZ) where workers earn 350 euro a month (comparable to China). Belarus also has a huge SEZ, called the China–Belarus Industrial Park[23].

Shenzhen is also a center where startups are created (sometimes 100 new companies are registered a day) or where startups created in other countries outsource their operations. Some startups have attained success, for example Petcube (distant watching home pets from smartphone and talking to them).

Just as not all factories in Shenzhen are like Foxconn, neither are they all like TCL. For every plant on the scale of TCL Industrial, there are dozens of smaller operations in Shenzhen, grimy little startup factories tucked away in run-down warehouses or suburban trading estates. T. Maughan visited Shenzhen Yuwei Information and Technology Development Co., Ltd, which "is one of these, a small factory with less than 200 workers that specializes in making GPS tracking devices for motor vehicles. Here too workers log one or two eight hour shifts a day, but the pay here is lower; most make just 2,000 yuan ($323) a month. The work looks monotonous, the atmosphere feels oppressive, the air thick with the

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[23] The Changing Face of Shenzhen

smell of sweat and solder”. At 5 PM /?/ there is a dinner break. “The workers form orderly, single-file lines, waiting for managers to tell each team they can leave. As they exit, they each pass through metal detectors, pausing to have their faces scanned by a facial recognition system mounted next to the door. Only when it beeps its approval can they leave. The canteen here is a far cry from TCL’s multi-level facilities. It’s another dingy space filled with wooden tables and benches, paint peeling from the walls”[24].

Yuwei is one of those factories – and Shenzhen is full of them – that specializes in components rather than finished consumer products. Just two minutes’ walk from the factory floor is “where the majority of Yuwei’s workers live, in four-story concrete housing blocks reminiscent of brutalist municipal projects in the US or Europe”. Inside, the rooms are largely featureless apart from basic, metal frame bunk beds.

Even Kate Davies, who’s visited multiple factories in Shenzhen, is surprised by the conditions: “For all the things they are manufacturing to be shipped to our homes,” she says, “bulging as they are with the things we all complain we have nowhere to put, the starkness of these dorms is sobering… [there’s] nothing in there but a poster, a pair of shoes, a water bottle, a plastic chair, and a bunk bed with no mattress”[25]. Living conditions in Foxconn dormitories in Shenzhen were not worse. The problem is that Foxconn workers assembled expensive and prestigious gadgets – iPhones.

Shenzhen is also a center of “shanzhai” industry producing mobile phones and other electronic devices: foreign technology is copied, but some innovations may be introduced into it. They are often “no name” products. “The Economist” calls “shanzhai” Chinese type of innovations. In 2009 in Shenzhen there were about 30000 small enterprises working under “shanzhai” model. About 13 per cent mobile phones sold in the world in 2009 were counterfeit products (not necessarily from China)[26]. They are highly demanded in countries with low incomes.

Chinese TNCs in ICT goods production

In October 2016 Google introduced on the market a new smartphone, competing with Apple. American journalist Jason Perlow called his article on competition between Apple and Google “Game of Smartphones”, as compared to “Game of Thrones”, popular TV-serial. “While Cupertino /Apple/ and Mountain View /Google/ are enjoying their war of attrition over handset market share, a chilling wind comes blowing from Shenzhen”. Perlow writes, “It is fun to watch the seemingly never-ending Google versus Apple war”. Google created Android and the

[24] The Changing Face of Shenzhen…
[25] Ibid
[26] Information Economy Report 2010. , U.N., N.Y.; Gen., 2010. P. 46

device OEM business that goes along with it. They open sourced it. It's out there. …the genie is out of the bottle, and Android Open Source Project (AOSP) could be forked as a derivative work. Endless amounts of Android devices can be made by third parties without Google having any say in it.

Apple Google "war" "would be an interesting battle to watch, but it ain't gonna stop the Giant Army of Ice Zombies", coming from behind the Wall /an allusion to the "Game of Thrones"/. Perlow says, "…when I mean Ice Zombies I mean extremely competent and powerful Chinese manufacturing giants such as Huawei, Xiaomi, and ZTE. And instead of the North they're coming from Shenzhen". But American companies "know they can't defeat the Ice Zombies /competitors from China/. They know most people can't afford to pay $600 for a smartphone. If a perfectly viable alternative exists for $200, most consumers are going to opt for that instead. They know they are a luxury goods manufacturer. They know they have pretty much maxed out market share for what they have, and they are in maintenance mode. Most people can't afford to buy luxury goods".

"China is going to transform the mobile industry landscape. Apple and Google and its most favored Android OEMs are living on borrowed time. The Ice Zombies are going to lay waste to the current smartphone industry, and nothing is going to stop them – regardless of who ends up in the Iron Throne in Washington in November. The only defense Apple and Google has is *innovation*, and moving on to the next thing, and creating a new market entirely"[27].

In the beginning of 2000-ies TNCs from the West and from Taiwan, South Korea dominated China ICT goods exports. In mid-2010-ies we can state that Chinese TNCs are among leaders on the world computer, telecommunications equipment markets.

Among five leaders of world personal computers market Chinese Lenovo was first in 2015 (52.7 million units, 20.7 of the world market). In 2014 it was also first with 59.3 million units sold and the market share of 19.2 per cent. Other companies in top five in 2015 were American Hewlett Packard (market share of 19.4 per cent), Dell (14.1 per cent), Apple (7.5 per cent), and Acer from Taiwan (7.1 per cent of the market)[28].

Five leaders on world tablets market in 2015 were Apple (with 24.0 per cent market share), Samsung Electronics (16.2 per cent), Lenovo (5.4 per cent), Asus from Taiwan (3.4 per cent) and Huawei (3.1 per cent). Lenovo and Huawei increased their market shares from 4.9 per cent and 1.3 per cent in 2014[29].

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[27] Game of Smartphones: Why neither Apple nor Google can win this war with China. Jason Perlow for Tech Broiler. June 30, 2016. http://www.zdnet.com/article/game-of-smartphones-neither-apple-nor-google-can-win-this-war-with-china/ (access date: 1.07.2016).

[28] IDC Worldwide Quarterly PC Tracker, January 12, 2016. http://www.idc.com/getdoc.jsp?containerId=prUS40909316 (access date: 2.09.2016).

[29] http://venturebeat.com/2016/02/01/idc-tablet-shipments-decline-10-1-in-2015-leaders-apple-and-samsung-both-lose-market-share/(access date: дата 1.09.2016).

Among 11 leaders of world mobile phones market, including both smartphones and ordinary mobile phones, in 2014 there were 5 Chinese companies – Lenovo (market share, 3.7 per cent, 4th rank after Samsung, Apple, Microsoft /Nokia), Huawei (3.8 per cent), TCL (3.4 per cent), Xiaomi (3 per cent) and ZTE (2.9 per cent) – 6th-9th ranks[30]. Smartphones constituted 2/3 of mobile phones sold in the world in 2014 and 4/5 in 2015[31].

In 2015 Samsung remained the leader in the worldwide smartphone market. The Korean giant finished the year with 324.8 million shipments, which is up only 2.1 per cent from the 318.2 million shipments in 2014. "With continuously increasing pressure in the high end from Apple, and at the low end to midrange from Chinese manufacturers Xiaomi, Huawei, ZTE, and others, Samsung faces a multi-front battle". Continued demand for Apple's iPhones, particularly in China and the USA, elevated Apple in 2015 to 231.5 million units shipped in the year. This represents 20.2 per cent growth from the 192.7 million units shipped in 2014.

Huawei was the biggest winner in 2015, with the strongest year-over-year growth among the top five vendors at 37 per cent. "Huawei also became the fourth mobile phone vendor in history to ship over 100 million smartphones in a year (preceded only by Nokia, Samsung and Apple). Of the key brands originating from China, Huawei has consistently expanded its presence and share on the back of affordable handsets in emerging markets, combined with increasingly competitive flagship models. Lenovo, just over one year after its acquisition of Motorola, was still trying to find its feet amidst organizational changes while facing greater competition in its domestic market from smaller, local competitors at the low end". The Motorola brand name will be shortened to just "Moto" and be used for high-end devices while the "Vibe" brand from Lenovo will represent the low-end.

Xiaomi leaned heavily on the China market for growth, where volumes were still 90 per cent domestic on average compared to international, despite ramping up in India and launching in Brazil. "Xiaomi spent 2015 trying to encourage a transition away from the low-end range of models into more midrange models, although the bulk of shipments still rest on low-end volumes from the Redmi line. On the basis of this growth, it was able to widen the gap from number 6, LG"[32].

But in the first quarter of 2016 Lenovo and Xiaomi left "top 5" on smartphones market. They were replaced by other two Chinese companies – Oppo and Vivo[33].

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[30] http://www.dailycomm.ru/m/30481/ (access date: 1.09.2016).

[31] https://www.strategyanalytics.com/strategy-analytics/news/strategy-analytics-press-releases/strategy-analytics-press-release/2015/07/30/huawei-becomes-world's-3rd-largest-mobile-phone-vendor-in-q2-2015#.V8Phe2wkrIU (access date: 2.09.2016).

[32] IDC Worldwide Quarterly Mobile Phone Tracker, January 27, 2016. https://www.idc.com/getdoc.jsp?containerId=prUS40980416 (access date: 1.09.2016).

[33] http://phoneradar.com/vivo-oppo-replaces-lenovo-xiaomi-top-5-global-smartphone-brands/(access date: 3.10.2016)

Chinese Lenovo, Huawei, Xiaomi, ZTE, TCL are among leaders on computer equipment and telecommunications markets. Three American leaders – Apple, Hewlett Packard and Dell rely on contract manufacturing which companies-contractors, mostly from Taiwan perform in China, in their Chinese affiliates.

Table 6

Companies from China and Hong Kong (China), ICT goods production, from "Forbes 2000" lists, 2014, 2016

	Name	Country	Rank in Forbes list		Rank in the sector		Sales ($B)		Market capitalization ($B)	
			2014	2016	2014	2016	2013	2015	2013	2015
Computer equipment (hardware)										
1	Legend Holding-	China		611		4		49.3		5.9
2	Lenovo Group	China	566	840	3	6	37.2	47.1	11.9	9.1
	Focus Media- Information Techn.	China		1738		12		1.3		20.9
	Great Wall Computers	China	1740	1922		14		11.6		2.5
Electronics										
7	Hikvision	China	1572	1098	22	15	1.5	4.1	11.4	19.5
8	BOE Technology Group	China	1668	856	25	8	5.4	7.7	4.8	12.9
Consumer electronics										
2	TCL Corp.	China	1335	1015	8	5	13.8	16.4	3.5	6.8
3	Great Wall Technology	China	1740		12		15.1		0.5	8.8
Telecommunications equipment										
2	ZTE	Hong Kong (China)	1220	776	8	5	12.1	15.7	7.2	8.5
Memory storage devices										
	TPV	Hong Kong (China)		1976		6		0.4		11

Source: http://www.forbes.com/global2000/list (access dates: 15.09.2014; 1.06.2016)

In Forbes 2016, 2000 Global companies list, there were 10 companies producing ICT goods from China and Hong Kong (China) (1/3 of the total number of companies from Asia and 10 per cent of the total number of companies producing ICT goods). Some of these and some other Chinese ICT goods producing companies are also included in Fortune and UNCTAD ratings.

Lenovo was called "a Chinese face of capitalism". It was established in 1984 by a dozen of researchers from the Institute of computer technology

of the Chinese Academy of Sciences. The company was called Legend. At first they imported computers, after that began developing Chinese content for software, and finally started computers manufacturing. Lenovo held IPO on the Hong Kong Stock Exchange. Main shareholder of Lenovo is Legend Holdings (41.5 per cent), which is controlled by the Chinese Academy of Sciences, a small percentage of shares are held by American investment funds, more than ½ is traded on stock markets[34].

In 2005 Lenovo purchased IBM corporation plant which manufactured personal computers in the USA. Lenovo sales centers are located in the USA, China, Singapore and France; its production centers are located in China, the USA, India, Mexico and R&D centers – in China, the USA, Japan[35]. In 2014 Lenovo acquired Motorola Mobility division from Google and a plant producing servers from IBM.

Chinese Xiaomi is a new "success story" in ICT goods production. It was established in 2010, and in 2015 it was one of "top five" in the world smartphones market[36].

There are many public sector enterprises among Chinese TNCs. Particularity of ICT sphere is often an active part the state or state organizations take in establishing such companies or their participation in the company capital. ZTE was established by a group of investors related to the Ministry of Aeronautics industry of China, Lenovo by a group of employees of the Academy of Sciences. China Electronics Corporation (CEC) is a state corporation, it was included in the Fortune 500 Global companies list in 2014 (but not in Forbes list as it is not a public joint stock company). It was established in 1989, and in 2001 it bought from Philips Corp. its share in their joint venture producing mobile phones. CEC manufactures computers, semiconductors, telecommunications equipment.

TCL Communication Technology Holdings Limited ("TCL Communication"), a global mobile terminal manufacturer and Internet service provider, was founded in March 1999. The company headquartered in Shenzhen, China, is a subsidiary company of TCL Corporation. TCL Communication's portfolio of products is sold in over 170 countries in the world and the company has 13500 employees in China and overseas.

In 2015, TCL Communication's total sales volume of handsets and other products increased by 9 per cent to 80.0 million units, with the sales volume of smart devices increased by 7 per cent to 44.5 million units. According to the international telecommunications research firm Gartner and to TCL data of year 2015, in terms of shipments volume, TCL Communication ranked no. 5 among global handset manufacturers. The company also ranked no. 8 among global smartphone

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[34] http://www.lenovo.com/lenovo/us/en/locations.shtml (access date: 3.03.2015).
[35] http://www.lenovo.com/lenovo/us/en/locations.shtml (access date: 3.03.2015).
[36] http://www.mi.com/en/about/ (access date: 10.09.2015).

manufacturers. Its tablet business grew 122 per cent in 2015 and ranked no. 7 among all tablet manufacturers[37].

TCL Communication operates with multiple brands: it produces TCL and Alcatel branded products and services. TCL chose its company name by taking the initial letters from *T*elephone *C*ommunication *L*imited. But at the beginning, TCL was also referred to as an acronym for "True China Lion". TCL's current corporate slogan is "The Creative Life" (also using the corporate name acronym). The TCL Corp., parent company, began manufacturing consumer electronics for the Chinese market during the 1980-ies. At the beginning TCL was a state-owned enterprise, but after IPO on the Hong Kong Stock Exchange there are also minority private shareholders[38].

There is such a trend that was pointed out: having worked for some time in computer companies in the USA, many Chinese and Indians returned to their home countries and used their experience for creating venture companies in technology sphere. In 2015 new Chinese billionaires attracted attention. Xiaomi company is called Chinese Apple and its main shareholder and founder Lei Jun is called Chinese Steve Jobs. Lei Jun had 107th rank in the Forbes Billionaires list in 2016[39]. Another founder of Xiaomi Lin Bin also was included on the Forbes billionaires list in 2016. Having graduated from Sun Yat Sen University in Guangzhou in 1990, he went to the USA where he got his Master of computer sciences degree. After that he worked as an engineer for Microsoft, for Google, at first in the USA and later in China where he headed Google department for Android platform localization in China[40]. Among other founders of Xiaomi company (there are 8 of them in total) there are Chinese who studied in the USA and worked for Microsoft, Google, Motorola companies.

Representatives of China hi-tech industry occupy an important place among Forbes 2016 billionaires of ICT sphere.

Prospects of ICT goods production in China and new technologies

"Today in ICT goods production we observe competition between cheap workforce and robots. Up-to-date mobile phones and iPads can be produced at automated production lines (Nokia) or by hundreds of thousands workers (Foxconn company)", points out A.V. Akimov[41].

[37] http://www.tclcom.com/?page=company_profile;
http://www.tclcom.com/?page=milestones (access date: 1.09.2016).

[38] http://www.tclcom.com/?page=milestones (access date: 1.09.2016).

[39] http://www.forbes.com/profile/lei-jun/ (access date: 11.11.2015).

[40] http://www.forbes.com/profile/lin-bin/ (access date: 11.11.2015).

[41] Akimov A.V. Trudosberegajushhie tehnologii i obshhestvennoe razvitie v XXI veke // Vostok (Oriens). 2015. N 1.

Foxconn (Hon Hai) was for a long period of time using cheap workforce for manufacturing labor intensive electronic products. But after publications in "New York Times" on workers' suicides, poor working conditions and dormitories looking like military barracks at its factory in Shenzhen, Foxconn president Terry Gou declared in 2011 that the company would use robots at its factories in China. And in 2013 10 000 robots were used at Foxconn factories in China[42].

Hon Hai, the world's largest electronics manufacturing services provider, reached an agreement with SoftBank from Japan and Chinese company Alibaba to invest in SoftBank Robotics Holdings Corp. An initial batch of Pepper robots, developed by SoftBank and Aldebaran (that was bought by SoftBank) is manufactured by Hon Hai in its Shandong plant in China.

"Pepper is an emotional robot, 120 cm high, connected with a cloud platform. It can be a nurse for your children and a guardian of your home". It can also accompany visitors in companies. As it is produced in China, its price is affordable: $2000, as compared to prices for other robots-companions ($10000–20000)[43].

"Robots are to be the focus of the Hon Hai Group's strategic development, and the company is to focus on Internet of Everything (IoT) key technologies", the group's chairman Terry Gou said. In an interview with Chinese media, Gou said that the introduction of "industrial robots" to the manufacturing sector was an irreversible trend, but would not reduce the number of workers employed in factories.

He said robots are the focus of the company's strategic development and that Hon Hai, also known as the Foxconn Technology Group, would take robotic services internationally in cooperation with China's Alibaba Group Holding Ltd and Japan's SoftBank. Hon Hai also produces industrial robotic arms and 48,000 have been installed in Hon Hai plants, including more than 2,000 self-developed mechanical arms in the company's Kunshan factory[44]. In May 2016 it was declared that 60000 workers at Foxconn factory in Kunshan would be replaced by robots. They lost their jobs but it was said that professional training would be offered to them[45].

The situation on China labor market has changed. "Workers born in the 1970s typically had limited education; they grew up when China was still backward and had little exposure to the outside world. Workers born in the 1980s have more technical expertise and depend heavily on working in a particular industry," says

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[42] http://www.everything-robotic.com/2011/11/huge-employer-in-china-makes-big-step.html; http://knowledge.ckgsb.edu.cn/2013/01/23/china/ chinas-manufacturing-metropolises-inside-foxconn (access date: 20.04.2015).

[43] http://www.zdnet.com/article/softbank-aldebaran-launch-pepper-an-emotional-robot/ (access date: 1.06.2016).

[44] Hon Hai to focus on IoT technologies and robots. http://www.taipeitimes.com/News/biz/archives/2015/12/17/2003634954 (access date: 1.06.2016).

[45] http://www.bbc.com/news/technology-36376966 (access date: 1.07.2016).

John Liu, the 31-year-old founder and owner of Harderson International, a small factory in southern China that applies paint to ceramics and glass. "Those born in the 1990s don't even want to work. Even many with college degrees don't know what they want. Single children are pampered, and they often stay home in their parents' homes. They make very unstable workers." "You know what makes really stable workers? …Robots".

The latest Shenzhen company to make headlines with a new automated line is Evenwin Precision Technology, an electronics processing company which sacked 90 per cent of its employees, replaced them with robots and saw productivity soar. Previously, there were 650 employees at the factory, now there are 60 – mostly engineers and accountants that oversee the production lines – and the number should go down to 20, according to company officials. The robots have produced almost three times as many pieces as were produced before. Quality has also improved. The product defect rate was 25 per cent, now it is below 5 per cent. The International Federation of Robotics (IFR), which represents robot manufacturers and research institutes, said China in 2014 surpassed Japan to become the world's biggest market for industrial robots. Some 200,000 were operating in China at the end of 2014, the IFR said, with 32,000 installed in 2013 alone, accounting for 20 per cent of worldwide installations that year. The robot-to-worker ratio in the country is still relatively low, the IFR said, with 30 robots working in manufacturing plants per 10,000 employees. Japan's ratio is 11 times higher[46].

In case automation and robotics have universal spread, it may result in "compression" of global value chains in electronics industry and in general in radical changes in the international division of labor. But in my opinion, reliance on cheap workforce and automation may co-exist. There may be several responses to these challenges of labor-saving technologies:

First, migration of labor-intensive industries to internal regions of China with lower wages and workforce ready to cooperate with employers (as it is done by Foxconn moving its manufacturing base to internal regions). Chinese ICT companies also create affiliates in countries with cheap labor force (including Eastern Europe).

Second, industry can be reoriented to regional market. There is a division of labor in ICT goods production between Asian countries: one of them (Taiwan, Republic of Korea, Singapore) have become electronic components suppliers, and other countries (China, Viet Nam, Malaysia) assemble finished goods from imported components and export them to many countries, including those of their region. The share of mutual exports of electronic components of six leading exporters of ICT goods: China, Hong Kong (China), Taiwan, Republic of Korea, Singapore, Malaysia in 2013 reached about 4/5 of their total electronic components

[46] A Chinese factory replaced 90 per cent of its employees with robots – production soared soon after. August 3, 2015 http://www.zmescience.com/research/technology/chinese-factory-sacks-people-gets-robots-0523534/ (access date: 1.10.2016).

for ICT goods exports. International economic integration processes have been intensified. China does not participate in Trans-Pacific Partnership. But the negotiations on creating Regional Comprehensive Economic Partnership with participation of 16 countries, China among them, continued in 2016. At microeconomics level, the region of East and South-East Asia is characterized by one of the highest levels of integration in the world: there is an interwoven network of global value chains, particularly in electronics industry, with GVCs not always coinciding with framework of international inter-state integration organizations.

Third, ICT goods production can be re-oriented partly to internal market. In China today a growing part of ICT goods is produced for its increasing internal market, e.g. smartphones. Chinese companies produce smartphones mostly for consumers with low and lower middle incomes, but such consumers constitute the majority of population and not only in Asian countries, the demand for such goods is likely to remain high.

Fourth, China in the future will face the problem of ageing population; even now there is a new generation of workforce, “little emperors”, the only children in their families, less obedient to employers and having more demands concerning wages and work conditions. At present China is developing robotics and automation, in particular in electronics industry[47]. Attempts of Chinese companies to raise their competitiveness also benefit from active China government support.

If long or broad global value chains would be replaced by highly automated production units in one country, these production units could be located not only in Western countries or in Japan, but also in China, in proximity of consumers’ markets. At any case China attaches great importance to development of automation and robotics in industry.

It is extremely important that China, Chinese companies take an active part in a new stage of scientific and technological revolution – robotics and automation. Other countries (and Russia in the first place) should take into consideration the experience of China. The heart of the matter resides not in creating demo-versions of intelligent robots, but in robotics and automation use in industry and other branches of economy.

[47] Akimov A.V. Trudosberegajushhie tehnologii i obshhestvennoe razvitie v XXI veke // Vostok (Oriens). 2015. №1.

Elena Maksimova[*]

Machinebuilding Industry of China and its Perspectives

At the turn of the 1980s, the Chinese government attempted to use a large-scale import of foreign engineering equipment for the modernization of the national industry engineering. However, further calculations have shown, that substitution of a significant share of imports with their own production could significantly reduce budget expenditures. Therefore, by 1990 about 60 per cent of the machinery production was produced in China[1]. In 1987 industry machinery was widespread throughout the country and occupied a priority position in China's economy. In almost every province and city was created an enterprise of the engineering industry. The main centers were Shanghai, Tianjin, Shenyang, Beijing, Harbin, Changchun, Taiyuan, Luoyang, Wuhan, Chongqing, Chengdu, XI'an and Lanzhou. Machinery wasn't an occasional choice as "key industry" among other industries of China[2].

Main economic indicators of machine-building industry of China

In 2011, 46 per cent of the national income of China was directed at the development of national heavy industry, particularly in metallurgy and machine-building. According to statistics, only these two industries bring in 20-30 per cent of the income from the whole industry of China. In 2012, China for 28th time (!) showed the world the highest growth rate of industrial production, amounted to 7.9 per cent [3].

From a statistical point of view the current condition of the Chinese economy in general and machinebuilding industry in particular does not cause fears. However, the global financial crisis brings about changes in economic forecasts of experts. So, according to experts from the Focus Economics industrial production growth rate of China will slow in the next two years, and will be 9.3 per cent and 8.7 per cent in 2016 and 2017, respectively[4].

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1 China Machine Building URL: www.photius.com/countries/china/economy/china_economy_machine_building.html (access date:1.05.16)

2 Ibid

3 China industry sectors: URL: www.economywatch.com/world_economy/china/industry-sectors.html (access date: 12.05.16)

4 Focus economics. URL: http://www.focus-economics.com/sites/default/files/FocusEconomics%20Consensus%20Forecast%20China%20-%20July%202013.pdf (access date: 13.05.16)

Chart 1

The growth rate of industrial production in the world as a whole, per cent

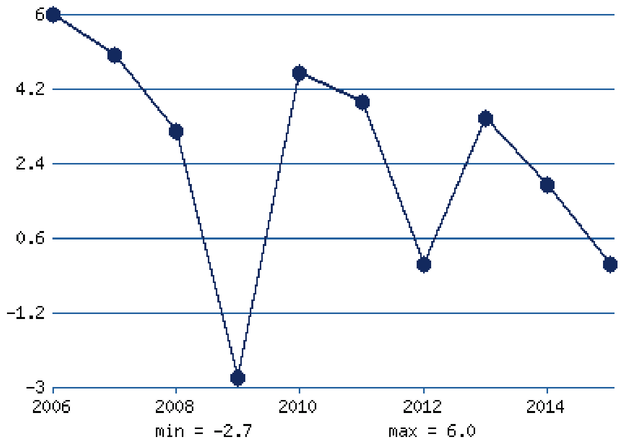
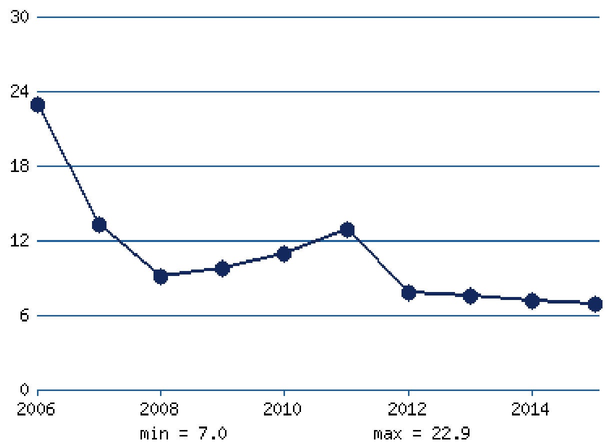


Chart 2

The growth rate of industrial production in China, per cent



The financial crisis has negatively affected the global market of the machine-building industry. If in the period 2009-2013 it has demonstrated a compound annual growth rate of 11.4 per cent and in 2013 its total volume amounted to $229 billion, then during 2013-2018 its grows rate reduction expected by the level of 7.4 per cent, that may bring it to the volume of $327 billion[5]. In the medium term, according to experts of Goldman Sachs, positions of the developing countries, especially China, in machinebuilding

[5] China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 4.05.16)

will be strengthening (table. 1). The total volume of machine-building production will increase from $530 billion in 2010 to $930 billion by 2025, corresponding to an annual growth of 3.8 per cent[6].

Table 1.

Forecast of production of net material production machinery, billion.

	2000 г.	2005 г.	2012 г.	2015 г.	2020 г.	2025 г.
Brazil	11,0	13,2	14,2	18,8	22.6	27,2
China	28,2	58,4	161,4	248,0	329,4	410,1
India	6,3	8,4	12,8	19,3	26,0	34,4
Japan	89,7	96,2	66.2	75.4	81.0	86,3
Russia	9,8	10,8	12,1	14,9	17,6	20,8
USA	123,7	124,5	103,0	115,5	129,7	144,9
EU	158,0	160,8	157,5	178,3	193,2	204,7

Source: IMF World Economic Outlook, Goldman Sachs

In these conditions the growth rates of machine-building products will decrease. The only exception will be Russia, where in recent years the emphasis is on import substitution policy(tab. 2).

Table 2

The annual growth rate of machine-building products

	2000-2005 гг.	2005-2012 гг.	2012-2015 гг.	2015-2020 гг.	2020-2025 гг.
Brazil	3,8	1,4	5,8	3,8	3,7
China	15,7	22,5	9,0	5,8	4,5
India	6,0	8,7	8,7	6,1	5,7
Japan	1,4	-7,2	2,6	1,4	1,3
Russia	1,9	2,2	2,3	3,4	3,4
USA	0,1	-3,7	2,3	2,4	2,2
EU	0,7	-0,4	2,5	1.6	1,2

Source: IMF: world economic Outlook, Goldman Sachs

Thus, according to the IMF (International Monetary Fund), China will actually become an indisputable leader of global machine-building market. However, detailed analysis of machine-building industry of China is of interest.

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[6] Kondrat'ev V.B. Global'nyj rynok mashinostroenija. URL:http://www.perspektivy.info/print.php?ID=235247 (access date:2.05.16)

According to the data presented in the report of the chamber of Commerce of the PRC[7], the Chinese government is focused on rapid urbanization and, accordingly, is planning a major investment in the machinery industry. In the current economic situation, the domestic demand is high, and exports of equipment abroad is increasing. In a further improvement of trade relations with Russia, Brazil and other countries will probably serve to stimulate this growth. Interstate China's trade grew by 6.9 per cent as of July 2014. Exports grew by 14.5 per cent, while imports fell 1.6 per cent. Industrial production grew by 9 per cent[8] as of July 2014 (compared with July 2013). The increase is due, on the one hand, to the investment in machinery industry and growth in demand for products from the developed countries. According to the Trading Economics China's economy grew 7.2 per cent in 2014 and 7.0[9] in 2015 (slightly below the forecast made by the IMF of 7.4 per cent and 7.1 per cent, respectively).

Over the last ten years compound annual growth rate of the China machinery industry accounted for 25 per cent. The strongest domestic demand associated with the industrialization process and key investment in machine-building industry was in industry served that China has become the largest manufacturer of machinery and industrial equipment in the world, in terms of total value of production. Recently, the industry is experiencing economic restructuring due to the slowdown in the investment. However, ongoing industrialization and urbanization in China will remain to be growth drivers in the future.

Machine-building industry is one of the largest economic sectors in Europe, where mostly concentrated small and medium enterprises. Their activities are usually connected with high technologies and formation of high value-added, largely innovative and focused on the development of individual solutions.

In the period of the eleventh five year plan (2007-2011), the Chinese government has actively supported the engineering industry, what greatly contributed to the development of this sector. In 2011 the gross output of machine-building industry amounted to 2 trillion euro, representing an increase of approximately 25 per cent (annualized). In the first five months of 2011, the total value of exports and imports of machine-building industry products reached $24.7 billion (an increase of 29.6 per cent[10]). Under these conditions the import growth exceeded export growth, what led to negative trade balance and consequently to the increasing pressure on equipment manufacturers.

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7 China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 4.05.16)

8 China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 4.05.16)

9 Kitaj. Tempy rosta. URL: ru.tradingeconomics.com/china/gdp-growth-annual (access date: 4.05.16)

10 China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 7.05.16)

In general, China machinery industry of China is moving to sustainable growth stage. In the future China will continue to make efforts to develop production of high-quality machine-building equipment in order to further expand market share and competition with international players.

Industry machinery is a significant part of all industry of China and the biggest industrial sector of economy with its technical standards that are constantly subjected to revision with a view to a continuous improvement. According to the China Machinery Industry Federation (CMIF[11]) the whole machine-building industry of China includes 12 sectors:

1. The automotive industry
2. Electrical equipment
3. Manufacture of heavy industry equipment
4. Petrochemical machine-building
5. Agricultural machine-building
6. Construction equipment
7. Production of internal combustion engines
8. Manufacturing machines and tools
9. Production of measuring devices
10. Manufacture of component parts of General machine-building
11. Equipment for environmental protection
12. Packaging equipment and food processing equipment

Agricultural machine-building

In the last decade, thanks to a special government support, large amounts of investment in the industry, reducing the tax burden and the implementation of the results of R & D agricultural engineering in China has grown extremely rapidly. The average annual gross output of the industry during this period increased by 15.5 per cent, making China, thus, one of the main manufacturers of agricultural machinery.

Figure 3 presents the main economic indicators of agricultural machinery industry from 2006 to 2010. During this period, the number of enterprises in the sector increased by 54 per cent, from 1757 enterprises in 2006 to 2,700 enterprises in 2010. The value of total production volume increased by 2 times: from 15.916.000 euro to 35.475.000 euro[12].

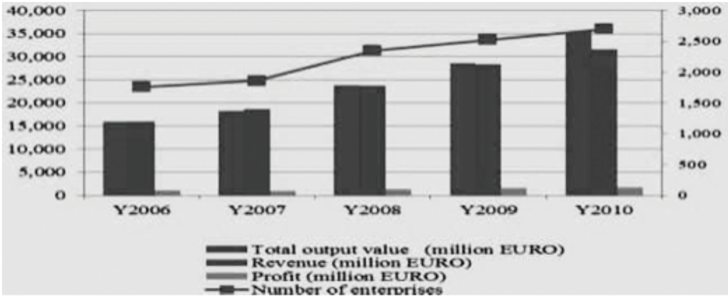
In general, state support of agricultural machine-building plays an important role, since it stimulates the potential demand and, as a consequence contributes to increase production volumes. Types of products that are subject to state subsidies such as equipment for processing agricultural products and feed-processing equipment sell well because of lower prices.

[11] China Machinery Industry Federation URL: http://jjw.mei.net.cn/english/3ind/ind.html (access date: 4.04.16)

[12] China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 7.05.16)

Chapter 3

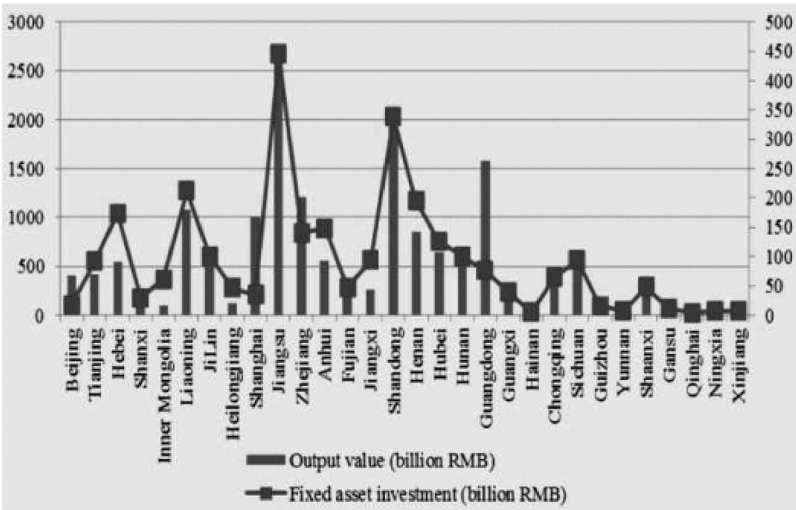
Main economic indicators of agricultural machinery industry of the PRC from 2006 to 2010



Source: 2011 China machinery industry Yearbook)

Figure 4

Regional structure of machine-building industry of China in 2011



Source: 2011 China machinery industry Yearbook

In comparison with the level of development of European technology, products of Chinese agricultural machinery are less perfect. For this reason China imports large quantities of high quality equipment. For example, Chinese manufacturers mainly produce heavy tractor with power from 90 to 120 HP, while in developed countries tractors of this class have more than 500 HP.

According to the decree of the Ministry of agriculture of China and the Ministry of Finance of the PRC on January 6, 2012 manufacturers of agricultural machinery in China have the right to receive state support. Thus, in the first half of 2012 a package of subsidies in total was approximately 20 billion yuan

(in 2011 for the whole year was allocated 17.5 billion yuan). The program of state support covers 12 categories, 46 sub-categories and 180 kinds of products.

Terms of payment subsidies:

1) 50,000 yuan per company, but not more than 30 per cent of the average sales of the last 3 years;
2) tractors with power more than 100 HP – 120,000 yuan;
3) tractors with power more than 200 HP – 200,000 yuan;
4) heavy cotton pickers – 300,000 yuan.[13]

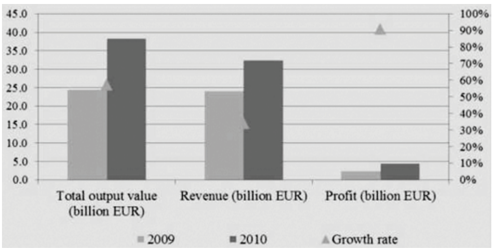
Grantees must be registered in the program of state support.

Construction equipment

According to statistics, in the period of the 11th five-year plan, the total revenue from sales in the machine-building industry of the PRC increased from 15.7 billion euro in 2005 to 54.5 billion euro in 2010, and the total profit of the machinery industry reached 5.6 billion euro, with an average annual growth rate of 28,05 per cent. Today, the construction machinery industry of China more has than 1,400 major companies and over 330,000 employees[14]. Figure 5 shows the main economic indicators of the industry the construction machinery industry for the period 2009-2010, when profits nearly doubled. In this industry China occupies the leading position in the world in sales revenues.

Figure 5

The economic indicators of the construction machinery industry in 2009-2010



Source: 2011 China machinery industry Yearbook

Demand for construction machinery in China has been rising for the recent years, attracting foreign manufacturers to the Chinese market. From 2001 to 2009, foreign investment in the industry grew by 200 per cent. Following product lines demonstrated the greatest growth: excavation equipment, paving equipment, cranes, rollers, machines for maintenance of the road surface, asphalt pavers and electric lift trucks.

[13] China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 10.05.16)

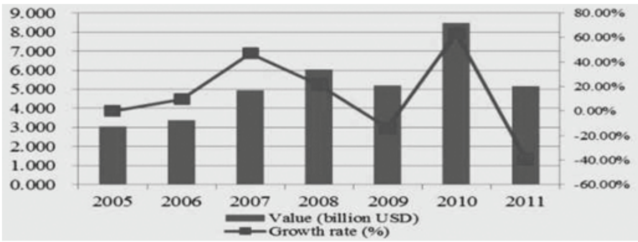
[14] China Machinery Industry Report 2015-2017. URL: www.dccchina.ru (access date: 7.05.16)

China took over a decade to become a major player not only in domestic but also in international construction machinery market. From 2009 to 2010 the total volume of exports and imports reached 14.8 billion euro (an increase of 45.7 per cent year on year). Imports amounted to 6.6 billion euro (an increase of 63.2 per cent), while export reached 8.2 billion euro (an increase of 34.2 per cent). It is also interesting to note that three of the leading Chinese construction machinery manufacturers – Intermix GmbH, SCHWING and CIFA – has acquired the status of world leaders in recent time. However, China still needs to import large quantities of construction equipment, especially hydraulic components and sophisticated excavators, due to the lack of the necessary level of technological development. But even despite this, revenue from sales of construction equipment in the 12th five-year plan reached 900 billion yuan by 2015.

Imported construction equipment. In Figure 6 we see that the growth of imports of construction equipment declined significantly in 2008 and 2009 due to the global economic crisis. By 2010, it recovered again (with an increase of 63.2 per cent compared to the same period last year) mainly due to large-scale investment undertaken by the government. Tellingly, in 2011, again saw a decline.

Figure 6

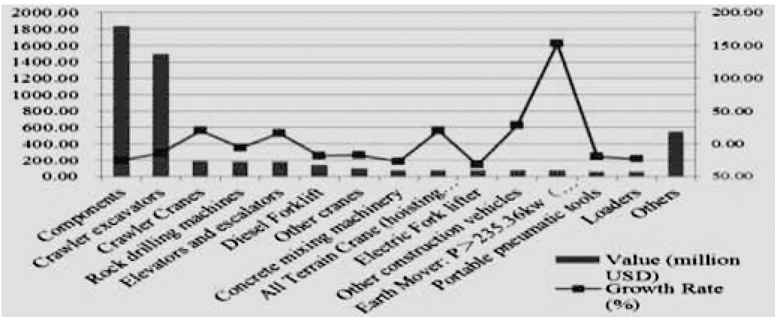
The value of imports of construction equipment



Source: 2011 China machinery industry Yearbook

Figure 7

The cost and the growth of imports of basic types of construction equipment. A large part of the total value of imports accounted for the various components of construction machinery and crawler excavators.

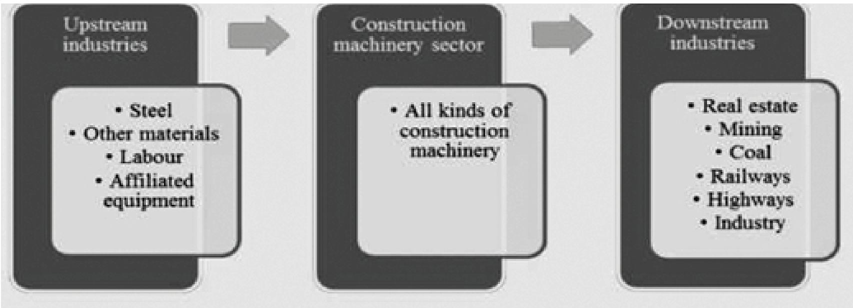


Source: 2011 China Machinery Industry Yearbook

Figure 8 represents the industrial chain, to visualize the relationship of the construction machinery industry of China with other sectors of the economy of the PRC. So, the construction machinery industry in China is highly dependent on the related industries. A significant effect have, on the one hand, such factors as the cost of resources (e.g. steel and human labor), and, on the other hand, the post-processing industry. Hence, the stagnation in the real estate construction and the decline in investment have a direct impact on the demand of the production sector of construction engineering.

Figure 8

Industrial chain.



Source: 2011 China Machinery Industry Yearbook

Processing equipment (machine tools)

Machine tool industry in China developed very rapidly over the last ten years. The cost of production increased from 3.7 billion euro in 2000 to 69.2 billion euro in 2010. Today, China has more than 1,000 key enterprises in the industry.

Machine tool industry is the driving force of the entire machine-building industry. The cost of all products of the cutting equipment sub-industry is about 16.3 billion euro, while punching equipment is up to 5 billion euro. The demand for CNC processing equipment is also growing. The volume of output increased from 59,000 parties in 2005 to 230,000 parties in 2010, what reflects the trend of the release of production with a higher added value. In 2010, it was released 223,000 CNC metal-cutting machine tools equipment and 12,000 pieces of CNC punching equipment. But, although Chinese manufacturers of processing equipment have made a huge leap in technology and production capacity, China still imports large volumes of machines of average and higher price categories, including CNC machining components, assembly and installation components and other punching equipment. Thus, import of the processing equipment continued to rise in 2010 and reached 12.4 billion euro (increase of 62 per cent yoy). The value of imports of metal-cutting equipment in 2010 amounted to 7.4 billion euro and 59,8 per cent respectively.

Presumably, the cost of imported equipment will continue to grow, largely due to the import of equipment from Japan, Germany, Taiwan, Korea and Italy.

According to an annual survey of the global industry processing equipment of World Machine-Tool Output & Consumption Survey 2015 conducted by Gardner Research Agency, China is the leader in the machine tool industry since 2009. However, in recent years there has been a downward trend in production volumes. So, the value of production produced in 2014 was $23.8 billion, less then the peak in 2011, which totaled $29.5 billion. Given the difficult situation in the global economy, it can be assumed that the production volume of machine tool industry in China will continue to decline[15].

Table 3

Production of cutting equipment in 2013-2014 in some countries (mln. $)

Country		cutting equipment, %	2013	2014
1	China	59%	$24,700.0	$23,800.0
2	Germany	71%	15,268.7	12,957.2
3	Japan	83%	11,333.6	12,831.6
4	South Korea	74%	5,150.0	5,631.0
5	Italy	51%	5,475,9	5,074.7
6	USA	75%	4,956.1	4,900.4
7	Taiwan	82%	4,537.0	4,700.0
8	Switzerland	84%	3,242.8	3,111.7

The major components of the engineering industry

Manufacture of major components (MCs) is less developed than other machine-building industries in China. The market especially lacks high-tech products. Today, the quality and main features of MCs is similar to that produced in the 1980th. The uneven quality and high staff turnover are the main weaknesses points of the industry. To survive in global competition, some companies are forced to import MCs from abroad. Although China itself exports a large volume of MCs, these components mainly belong to the category of labor-intensive products with low added value.

Table 4 shows sales of the MCs of the machine-building industry of China in 2010, including sub-industries of fasteners, dies and molds. Sales of metallurgical powder, chains and springs has grown by about 35 per cent, transmission by 20 per cent, the dynamic couplings by 19 per cent and the fasteners by 15 per cent.

[15] World Machine-Tool Output & Consumption Survey 2015
URL: http://www.gardnerweb.com/cdn/cms/GR-2015-WMTS.pdf (access date: 1.03.16)

Table 4

Sale, export and import key components for machine building industry of China in 2010

Items	Sales revenue (million EUR)	Growth rate	Import value of product (million EUR)	Growth rate	Export value of product (million EUR)	Growth rate
Gears	18,125	20%	8,413.73	46%	2,156.96	58%
Fasteners	7,000	15%	2,267.98	25%	2,894.45	46%
Chains	1,850	35%	182.39	14%	563.03	25%
Springs	1,812	34%	428.22	39%	150.67	50%
Metallurgical powder	1,037	36%	–	–	63.44	0%
Dynamic couplings	1,325	19%	277.55	-33%	222.04	44%
Total	31,150	21%	11,569.87	36%	6,050.59	41%

Source: 2011 China machinery industry Yearbook

China is one of the largest producers and consumers of the MCs of engineering, but the majority of the equipment belongs to the low-cost category. High quality products mostly imported from abroad. In 2010, the total output value amounted to 31 billion euro (21 per cent annual growth). The value of combined exports and imports reached 17.6 billion euro (38 per cent annual growth). The value of imports as a result of continued growth reached 11.5 billion in 2010, with the greatest relative growth of transmissions (72.7 per cent). Exports amounted to 6 billion euro, where the highest volume was that of fasteners.

Hydro-pneumatic components

In 2012, China had more than 3,000 enterprises producing hydro-pneumatic components. In 2010, the total amount reached 7,966.25 million euro. The total value of exports and imports amounted to 3,739,7 million euro.

China represents the world's largest market for hydraulic products and ranks second in pneumatic products, mainly due to efforts to improve the infrastructure of the machine-building industry. China still lacks advanced technologies for manufacturing advanced hydro-pneumatic components, that’s why the demand for imported products from developed countries is still high. The import volume of the hydro pneumatic products is 38,86 per cent.

Molds

According to the National Bureau of statistics of China, the performance of enterprises in this industry has improved mainly due to the stimulating plan of the government, which helped to boost domestic demand. Today sales and profits continue to grow. Table 5 shows the revenues of these enterprises in 2009 and 2010 and a small increase in the number of enterprises as well.

Table 5

Main economic indicators of the industry for the production of molds in 2009-2010

Indicator	Number of enterprises	Total output value (million EUR)	Sales revenue (million EUR)	Profit (million EUR)
Y2010	2,884	20,384.50	19,995.12	1,175
Y2009	2,797	15,826.50	15,474.12	954
Growth rate	3.11%	28.8%	29.22%	23.1%

Source: 2011 China machinery industry Yearbook

Plastic molds became the most growing group of products with a 45 per cent share of the total production in 2010. At the same time, the share of the stamping forms was 37 per cent, and molds and other forms accounted for 9 per cent. According to the statistics of China customs, the total value of exports and imports of the molds in 2010 amounted to 3.3 billion euro, which was 11.85 per cent more than the previous year (including imports amounted to 1.6 billion or 4.99 per cent more than the previous year). Plastic molds was the largest product group, with 55.74 per cent of imports and 68,96 per cent of exports. Stamping shape was the market challenger with 38,17 per cent and 22.9 per cent respectively. Leaders from the point of view of the country of origin are Japan, Korea, Taiwan and Germany. In General, the market of molds of low and middle price categories is suffering from oversupply at the time, as the need for high-quality products can be satisfied mainly by foreign manufacturers.

Bearings

According to the National Bureau of statistics of China, today the country has about 1,850 large enterprises producing bearings. In 2010, the income of these subsidiaries amounted to 15.75 billion euro (an increase of 36.96 per cent), 1.5 times greater than the volume achieved during the 11th five-year plan. The volume of production amounted to 15 billion units (increase of 36,36 per cent). Economic efficiency has improved significantly with the profit of 937,5 billion (increase of 66.67 per cent).

China consumes and exports large volumes of products which include bearing mechanisms. In 2010 the country exported 4.1 billion units of bearing products, more than 50 per cent more than in 2009. The value of exports of this product amounted to 2.6 billion euro (63,63 per cent annual increase). Ball bearings, tapered roller bearings, spherical roller bearings and bearing parts are the main part of exports of these goods. In 2010, was imported 1.7 billion units, that is 30,97 per cent more than the year before. The value of imports reached 3 billion euro (increase of 34.4 per cent yoy). The number of imported ball bearings increased by 66,91 per cent (1.1 billion units), and its import value increased by 33,88 per cent (1 billion euro). Bearings are imported mainly from Japan (898 million euro or 29,74 per cent of the total amount,

55,01 per cent of the annual increase), Germany (€765 million or 25.34 per cent of the total amount, 21,73 per cent of the annual increase), Italy (111 million euro, or 3,69 per cent of the total amount, 38.07 per cent of the annual increase).

Table 6

Main manufacturers of components, hydro-pneumatic elements, seals, molds, bearings in China

General components	CN Power Gearbox Co., Ltd Shaanxi Fast Group, Shaanxi Fast Gear Co., Ltd.
Hydro pneumatics	Shanghai Electric Hydraulic & Pneumatics Co., Ltd. Shanghai Camozzi Pneumatic Control Components Co., Ltd
Seals	Anhui Zhongding Sealing Parts Co., Ltd.
Moulds	Qingdao Haier Mold Ningbo Heli Mould Technology Co., Ltd.
Bearings	Wafangdian Bearing Group Corporation Wanxiang Group

Source: 2011 China Machinery Industry Yearbook

Heavy machinery

Since 2000 there has been a steady growth of heavy industry of China. The total volume of production and sales continue to beat your own records. In 2010, total production of the industry amounted to 88,898.5 million euro, which is 11 times(!) exceeded the same indicator for the year 2000 and equivalent to about 27.5 per cent annual growth over the 10 years. Today, China has about 1000 key enterprises of heavy machine-building industry. Table 7 presents the main indicators of the industry for 2010.

Table 7

Key indicators of the heavy engineering industry of China in 2010

Name	Number of enterprises	Growth rate	Total output value (million EUR)	Growth rate	Profit (million EUR)	Growth rate
Total	4,686	6.79%	88,898.50	22.88%	6,915.12	35.62%
Metallurgical and mining machinery industry	2,384	6.52%	40,094.75	24.33%	3,121.25	48.75%
Lifting and transport machinery industry	2,302	7.07%	48,803.75	21.70%	3,793.87	26.44%

Source: 2011 China machinery industry Yearbook

Heavy machinery includes 2 categories: metallurgical/mining machinery and lifting machinery. In 2010, total production for the metal smelting in China amounted to 695,000 tons and the volume of production of mining and shaft equipment amounted to 4.19 million tons and sheet metal equipment 526,000 tons. In lifting machinery, the production of taps made up 5.77 million, and forklift trucks – 151,000 units. In 2010, export value of the mining industry production amounted to 1.8 billion euro, while the value of imports was 1.6 billion euro. The top five imported goods were: metal rolling machines parts of metal-rolling equipment, crushing/grinding equipment, filters and rock drills. From the point of view of the country of origin, China metallurgical mining industry imported from Germany production for 479 million euro, from USA – 350 million euro, from Japan – 209 million euro, from Italy – 182 million euro. The same year the value export of mechanical handling equipment was 6.9 billion euro and import reached 3 billion euro. Import and export of taps has declined to 523 million euro and 2.3 billion euro respectively. Import of lifting and handling equipment from Germany amounted to 881 million euro, from Japan – 498 million euro, from Korea – 241 million euro and the USA –187 million euro.

Power equipment

The demand for power equipment mainly depends on the level of development of the energy sector. In 2010, the industry of power generating equipment recovered from the impact of the financial crisis and the cumulative income has continued to grow. By the end of November 2010, the installed capacity of power equipment in China reached 902,57 million kW (10.80 per cent more than in 2009). The share of local manufacturers of power generating equipment has increased, intensifying their competition with local players. In recent years, the market of power generating equipment can be characterized as a competitive playing field.

FORECAST 2016-2017

Current trends in the machinery industry of China:

- Local companies usually produce low - or medium-tech equipment. Technological level of products lags behind the equipment produced in developed countries (European countries, USA, Japan) according to parameters such as quality, performance, energy efficiency, brand reputation, etc. Even the products of several leading Chinese players, usually, does not reach the advanced level of quality. R & D investments remain low, often not reaching 1 per cent of the sales companies, so that Chinese manufacturers remain in the low price segment.
- Fierce competition among manufacturers of low and medium price ranges.

- Most sectors of the machine-building industry is highly desintegrated. Official statistics has roughly 34,000 companies in the engineering industry with an annual turnover of $600,000 each, but there are also a lot of small companies, dealing mainly in components of the low price segment.
- Price pressure from the consumer industries is increasing, due to increased competition (for example, in struggle for the local markets), although investment in the consumer goods' production in China was significant. So, given the disposable income per capita and the first signs of saturation of urban markets, manufacturers are increasingly turning its attention to local markets. As the income of local markets remain very low, we can expect an increase in demand for low price equipment, increasing the scope of activities Chinese engineering.
- Local companies are increasing production capacity. The quickest way for Chinese companies to respond to market capacity and pressure from competitors is the use of the scale effect. Supported by good sales, high saving rates, and generous lending to state enterprises, there are enough funds to expand production.
- Foreign companies continue to invest in China – Foreign investments in machinebuilding industry of China has reached a significant level thanks to the many European companies that host their production facilities. The cost of production of enterprises with foreign investment will grow by about 40 per cent in the period from 2011 to 2017. Since these private enterprises have access to foreign technology and knowledge, they probably will be ready to compete with imported equipment.
- Chinese manufacturers are constantly improving their technology, trying to produce products with high added value, to reduce pressure from competitors.
- Despite the fact that imports has been growing on average by 27 per cent per year, starting from 2011, the market share of imported machinery will fall from 40 per cent in 2011 to 32 per cent in 2017 (according to analysts).
- Excesses of the machine-building equipment in China are exported. The volume of exports will grow more rapidly than imports from 2011 to 2017, with an annual growth rate of 35 per cent and 28 per cent, respectively. The value of exports, however, still accounts for 50-60 per cent of the value of imports. Export markets are more attractive due to higher profitability and willingness to pay from customers. If the current tendency continues, it is possible that by 2020 China will turn its trade deficit in machine-building equipment to the surplus, in particular due to energy-generating equipment.

However, there are several opposing trends:

- The cost of doing business in China is rising. First, the cost of unskilled labor, which remained virtually unchanged in the last decade begins to grow; in particular due to the establishment of a minimum wage by the government in 2005. Second, it is expected that in the coming years, the Chinese Central government will begin to reform the housing sector, which would entail higher prices for oil, gas, water and electricity. The industrial development land prices may continue to rise further. In addition, if the Chinese government will seriously pay attention to the protection of the environment, as noted in the development plan for the next 5 years (12th five-year plan), this will result in an increased operational costs for the manufacturers.
- The imported foreign technology may become more competitive compared to the Chinese. But in long-term perspective the situation will stabilize.
- China as a manufacturing base may become less attractive to foreign investors: If the two main incentives to produce in China – local demand and cost of production – will lose attractiveness, foreign direct investment is expected to decline. This will lead to a general decrease in the production of Chinese machine-building industry and will take off the pressure from the local producers involved in exporting products.
- Chinese machine-building industry is likely to be consolidated: costs of production – from raw materials to wages in China are rising. Profit margins and return on assets (ROI) increased from 2012 to 2015, but the selling prices of products did not increase accordingly. Therefore, the increase of profitability should be based on growth in production volumes and cost of sales. Both of these factors, ultimately, must come to the same level, but the further price increase may cause decline in profit and profitability. In 2014, 15 per cent of companies in China were loss-making, and in the first quarter of 2015, this number had risen to 23 per cent. Ultimately, it is not unexpected that the market "squeezed" the unprofitable producers, both local and invested from abroad. The number of competitors in the market has dropped, but remained the most viable.

Main trends machine-building industry of China

A growing number machine-building factories industry moved to the mainland of China. They include manufacturers from Hong Kong who are actively exploring other regions. That served for a sharp intensification of competition between producers from Hong Kong. In addition, they have to compete with other Asian producers.

Growing application of plastic materials in electronic and telecommunication equipment, medicine and spare parts has increased demand for more precise and sophisticated technologies of plastic molding. Since most of the customers of the machine-building industry need to remain competitive,

the demand for high quality continues to grow. This trend translates into greater use of computer technology in the design and manufacture. For example, computer–aided design, manufacturing and engineering (CAD/CAM/CAE) of the machine structure can be applied to lines for plastics processing for the best design of high-precision equipment to eliminate vibration and improve rigidity.

For the purposes of settling in foreign markets, there is a growing need for manufacturers to develop distribution network of products and provide after-sales service. The main strategy for producers is to improve quality. Some large manufacturers are also working to improve production efficiency. So, in the case of metal-working equipment to control the tool feed and materials were used electronic tuners. The equipment for molding plastics, for example, was equipped with programmable controllers and closed designs that allow you to track the position of the moving elements, the feed rate of raw materials and also temperature and pressure to reduce the number of defect products. measures to ensure security were also enhanced. For example, was introduced a device to control the connector of the mold.

Bibliography:

China Machinery Industry Report 2015-2017. URL: www.dccchina.ru

China Machine Building URL: www.photius.com/countries/china/economy/china_economy_machine_building.html

China industry sectors URL: www.economywatch.com/world_economy/china/industry-sectors.html

Focus economics URL: http://www.focuseconomics.com/sites/default/files/FocusEconomics%20Consensus%20Forecast%20China%20-%20July%202013.pdf

Kondrat'ev V.B. Global'nyj rynok mashinostroenija
URL: http://www.perspektivy.info/print.php?ID=235247 (access date: 2.05.16)

Kitaj. Tempy rosta. URL: ru.tradingeconomics.com/china/gdp-growth-annual

China Machinery Industry Federation URL: http://jjw.mei.net.cn/english/3ind/ind.html

World Machine-Tool Output & Consumption Survey 2015
URL: http://www.gardnerweb.com/cdn/cms/GR-2015-WMTS.pdf

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Pakistan – China Nuclear Cooperation

According to many Russian and international experts it was China, which did play a very significant role in facilitating the realization of Pakistani nuclear program. Russian experts have been investigating this issue; however, the problem still remains relevant and unresolved with many things still obscure, especially in the light of recent changes in Pakistani – Chinese cooperation in this field. In this article, the author focuses her attention on the following issues:

- The cooperation between Pakistan and China, since the year 1998 (when Pakistan has successfully carried out a successive series of its nuclear weapons underground tests) till the present time.
- The current state of the atomic energy in Pakistan and the impact of Chinese FDI on this sector of Pakistani economy.

Nuclear cooperation.

Even long before Pakistan had carried out its first successful nuclear tests in the late May of 1998, Pakistan and China had signed in 1986 an agreement on the cooperation in the field of nuclear energy. Under the agreement, China handed over the technology of producing a nuclear warhead (its yield was 25 kilotons) to its Pakistani partners.[1] Above that, Pakistan and China had agreed on fostering a constant dialogue between Pakistani and Chinese nuclear scientists.

After the nuclear tests that Pakistan had carried out in May 1998, the United States reduced its economic assistance to the country as well as imposed a wide range of sanctions. In these circumstances, on September 24, 1998 the Prime Minister of Pakistan Navaz Sharif stated that Pakistan was ready to sign the Comprehensive Nuclear-Test Ban Treaty, which was signed on September 10, 1996 at the UN General Assembly session and open for signature on September 24, 1996. He also noted that Pakistan was prepared to join the treaty, even if India would not have signed it, but provided the US would lift all the sanctions imposed on Pakistan. Ultimately, the US rejected signing this treaty at all.[2]

Under these conditions, Pakistan saw its cooperation with China as something more attractive in both political and economic respects. As Canadian researcher T.V. Paul notes, even after Pakistan had carried out its nuclear tests

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[1] Khmelinetz S.M. “The Nuclear Program of the Islamic Republic of Pakistan” available at: http://www.iimes.ru/rus/stat/2004/14-09-04.html – The Institute of Middle East

[2] Betsy Pisik, "Pakistan Will Sign Nuclear Test Ban, Even If India Doesn't," Washington Times, 24 September 1998, p.A-17.

in 1998, China supposedly kept assisting Pakistan in constructing the Khushab reactor (Punjab province) with 50 MW capacity, so that reactor would be able to produce plutonium and heavy water, even though "although such a help is in direct violation of Article III of the NPT".[3]

The cooperation between Pakistan and China became even more tangible when a delegation from Pakistan paid a visit to China right after the Indians had conducted their nuclear tests. Pakistan sought to enlist China's support with regard to the nuclear issue. Although, the results of this meeting still remain ambiguous, it is believed that China did not mind if Pakistan conducted its nuclear tests in response to the same kind of tests in India. However, Beijing formally has never guaranteed that China would officially support Pakistan if it conducted its nuclear tests.[4]

According to T.V. Paul, Pakistani-Chinese cooperation in the sphere of nuclear energy has taken on a great importance after it was disclosed, that Pakistan and North Korea had exchanged nuclear technologies. In October 2002 some media sources reported that since 1997 Pakistan had been supplying to North Korea a wide range of the technologies of uranium enrichment. In return, Pyongyang supplied to Islamabad intermediate-range ballistic missile complexes "Nodong", which could be possibly used as a delivery system for nuclear weapons.[5]

The role of China in this issue is still unclear, however, some experts suppose that China actively facilitated this deal to make it possible at all. They posit their thesis on the fact that "Nodong" is actually identical to Chinese CSS-2, thus it was China which was the main exporter of missile technologies to North Korea and may have been known about such a deal between North Korea and Pakistan.[6]

Nevertheless, the author of this paper believes that such assumptions seem to be questionable to some extent, because there is no reliable evidence revealing that China did have anything to do with this deal. Furthermore, many scientists provide too little information about Chinese involvement, so a researcher should be very cautious about such statements.

At the same time during that time, Pakistan – China nuclear cooperation was developing very actively: Pakistan and China signed a contract on the construction of Chasma nuclear plant (power capacity is 325 MW), which was handed over to PAEC on September 26, 2000.[7]

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[3] T.V. Paul "Chinese-Pakistani Nuclear/Missile Ties and the Balance of Power", The Nonproliferation Review/Summer 2003, p.5.
Available at http://cns.miis.edu/npr/pdfs/102paul.pdf

[4] Ibid

[5] Ibid

[6] Ibid

[7] "China Hands Over Chashma Nuclear power Plant to Pakistan" Radio Pakistan (Islamabad), 27 September 2000

The Chashma Project

The Chashma Project is a pivotal element in the Pak-China nuclear cooperation. On April 9, 2005 Dr Ishfaq Ahmad, a special advisor to the Prime Minister of Pakistan on the strategic program, said that Pakistan was going to construct even more nuclear power plants, as soon as the second power unit of the Chashma nuclear complex was completed. So, Pakistan would be able to reach the level up to 8.000 MW of electricity production by the year of 2020. The construction costs of the second unit of the Chashma nuclear complex was beyond 547 million dollars. The second power unit has been put in operation in May 2011 and it is power capacity was 325 MW. This project was implemented by a joint effort of the Chinese National Nuclear Corporation and Pakistani Atomic Energy Commission. Chashma is currently subject to IAEA safeguards.[8]

The Chashma Project is still in development with a great participation of China in it; by December of 2016 the third power unit of the plant is planned to be put in operation as well as the forth one by 2017.[9]

In March 2013, Pakistan and China reportedly agreed on that that one more power unit was going to be constructed in order to foster resolving of the problem of energy deficit in Pakistan.[10] In June 2013 the Federal Government of Pakistan announced that Pakistan and China were going to implement the Karachi Coastal Project, under which a new well-equipped nuclear power plant was about to be constructed in Karachi, and its power capacity would make up to 1.100 MW.[11]

It is worth emphasizing that the civil nuclear power plants Chashma, which are currently under IAEA safeguards, are not to be confused with the Khushab-4 Project, which is likely to be used for military purposes. What matters here is that some experts do not believe that China is deliberately funding the construction of the forth power unit of Khushab knowing that this facility is meant for military purposes. [12] Other specialists, on the contrary, assert that Beijing is financing this project as well as providing all the necessary technical support on purpose.[13]

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[8] http://www.dawn.com/news/388561/pakistan-to-build-more-n-power-plants-ground-breaking-of-chashma-2

[9] https://www.iaea.org/NuclearPower/Downloadable/Meetings/2013/2013-09-02-09-04-TM-NPTD/10_pakistan_nasr.pdf; http://tribune.com.pk/story/654091/electricity-production-work-on-chashma-iv-plant-under-way/

[10] «China, Pakistan signed deal on 1,000 MW reactor», Beijing, March 26, 2013 http://www.thehindu.com/todays-paper/tp-international/china-pakistan-signed-deal-on-1000-mw-reactor/article4549104.ece

[11] http://tribune.com.pk/story/559885/govt-to-kick-off-work-on-1100mw-nuclear-power-plant/

[12] Mark Hibbs „Chinese Help on Khushab-4?", http://hibbs.armscontrolwonk.com/archive/162/chinese-help-on-khushab

[13] T.V. Paul "Chinese-Pakistani Nuclear/Missile Ties and the Balance of Power", The Nonproliferation Review/Summer 2003, p.4. Available at http://cns.miis.edu/npr/pdfs/102paul.pdf

Under the agreement between Pakistan and China signed in 2003, China was supposed to supply two more nuclear reactors with their power capacity of 340 MW each. However, there exists an opinion that China actually sold to Pakistan reactors, the total capacity of more than 1 GW, but not of 680 MW, as it was stated in the agreement.[14] Regardless of the actual capacity of these reactors, the Commercial Bank of China was considerably concerned about this deal, since the US was determined to impose sanctions on Iran because of the development of military nuclear program there. As a result, the Commercial Bank of China decided to bring funding of this project to a complete halt.[15]

Nevertheless, China has adopted a posture that nuclear cooperation with Pakistan is legal, since Washington established the same sort of contact with India in 2008, when the parties signed so-called “the 123 Agreement”, even though India has never been a signatory to the NPT.[16] Although the US-India nuclear deal did not triggered any tangible discontent with it in China, the Chinese has conducted the pro-Pakistani policy, supporting Pakistani demands to get a commensurate refund from the US. China does not clearly stand for providing Pakistan with the same trade preferences from the NSG which India enjoys.

But at the same time, some European diplomats informed their Chinese counterparts that the NSG are not ready to lift the sanctions imposed on Pakistan, despite its requests to do so during the bilateral US-Pakistan negotiations on security issues.[17]

Pakistan and China continued their cooperation in the sphere of delivery systems of nuclear weapons. In March 2011, Pakistan successfully tested a surface-to-surface short-range ballistic missile (SRBM), which is capable to carry a nuclear warhead. “Hatf-2” was jointly developed by Chinese and Pakistani military engineers. Its range of action is 180-200 km (112-124 miles); its technical attributes are identical with the Chinese research rocket TY-3.[18]

China grants considerable military aid to the army, naval and air forces of Pakistan. As Norwegian researcher Qandeel Siddique notes, in 2013 Pakistan

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[14] Geoff Dyer and Farhan Bokhari, „China-Pakistan Reactor Deal to Open Fresh US Rift‟, 23 September 2010, http://www.ft.com/intl/cms/s/0/83db2ac8-c72d-11df-aeb1-00144feab49a.html

[15] Claude Rakisits «Pakistan-China Bilateral Relations 2001-2011: A Deepening but Cautious Partnership», Available at http://www.regionalsecurity.org.au/Resources/Files/vol8no3Rakisits.pdf

[16] Ibid

[17] Mark Hibbs «Pakistan Deal Signals China's Growing Nuclear Assertiveness», Nuclear Energy Brief, 2008. Available at http://pk.boell.org/sites/default/files/downloads/Pakistan_Deal_Signals_China.pdf

[18] „Hatf-2‟, Missilethreat.com, http://www.missilethreat.com/missilesoftheworld/id.48/missile_detail.asp

was the most significant importer of Chinese armaments. China keeps assisting Pakistan in the development of plutonium nuclear technologies. Thus, China remains the main supplier of military and nuclear technologies to Pakistan.[19]

The declassified CIA report published in April 2013 states that China exports nuclear technologies to third-world countries, including Pakistan without notifying the IAEA about it. CIA clams that in the late 70s China had already handed over some military nuclear technologies to Pakistan. Although it is worth mentioning that the cooperation was quite tantamount because in exchange Pakistan provided the Chinese with the gas centrifuge technologies which Dr Abdul Qadeer Khan brought in Pakistan in the mid-70s.[20]

The Diplomat magazine says that on February 10, 2015 in a press conference in Beijing, Wang Xiaotao, the vice-minister of the National Development and Reform Commission, said China "has assisted in building six nuclear reactors in Pakistan with a total installed capacity of 3.4 million kilowatts." Moreover, he added that China would continue its cooperation with Pakistan in this field. [21] The journalists note that this is reportedly the first time that a top official has publicly admitted such a scale of China's cooperation with Pakistan. Most part of the information about the Sino-Pakistan nuclear cooperation until now had remained clandestine. The NSG member-states were profoundly concerned about that statement, since such cooperation in not under any control of the NSG, so Pakistan as a non-member state of the NSG would not allow any inspections of the NSG or the IAEA at its nuclear facilities.[22]

According to the Interpreter magazine, on June 19, 2015 the Sindh Environmental Protection Agency approved the construction of new nuclear reactors in the western part of Karachi. The project will see two reactors built alongside the existing Karachi Nuclear Power Plant (KANUPP), which is a 137MW Canadian deuterium uranium design from the 1970s. The new reactors, named K-2 and K-3, are of Chinese origin and are expected to contribute a much-needed 2200 MW of power output.[23]

To sum up it has to be mentioned that there are several serious obstacles to the bilateral cooperation between Pakistan and China. First, as some experts point out it is challenging now for China to grant the same amount of economic aid

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[19] Qandeel Siddique "Deeper than the Indian Ocean? An Analysis of Pakistan-China Relations", SISA Report no. 16, Oslo, February 2014. Available at http://strategiskanalyse.no/Publikasjoner%202014/2014-02-27_SISA16_Sino-Pak_QS.pdf

[20] The Nuclear Vault, National Security Archive Electronic Briefing Book No. 423, The George Washington University, 23 April 2013.

[21] http://thediplomat.com/2015/02/china-confirms-pakistan-nuclear-projects/

[22] Ibid

[23] http://www.lowyinterpreter.org/post/2015/07/09/Sino-Pakistan-civil-nuclear-cooperation-A-growing-challenge-to-the-global-nuclear-order.aspx

to Pakistan as it used to do before.[24] Although some Russian specialists, Igor Denisov in particular, the senior research associate of the Center for Eastern Asian Studies and Shanghai Cooperation Organization of MGIMO University, asserts, "Financial capabilities of China still remain tremendous [as of 02/2015]".[25]

I believe that it will mostly depend on the political determination of Beijing rather than on its financial capabilities. Above that, if the situation in Pakistan deteriorates to the extent that the international community would criticize Pakistan for its attitude towards war on terror and facilitating non-proliferation of nuclear weapons, it would be extremely difficult for China to keep assisting its ally as it used to do before. We also cannot deny the fact that Pakistan pivots its foreign policy not only on Chinese support, but also on the political and military power of the United States.

Nuclear power in Pakistan and Sino-Pakistan cooperation

In general, we can mark out at least three primary salient features of the development of this sector of Pakistani economy:

- Atomic energy is not the major source of energy to produce electricity in Pakistan. It comprises only about 4 per cent of the total electricity production in Pakistan (2015), meanwhile oil comprises 37 per cent, gas 28 per cent, hydro energy 31 per cent, coal 0.04 per cent and other sources – 0.03 per cent.[26] The total capacity of all the nuclear power plants in Pakistan is currently at the level of 1040 MWe, which is not very much, but it tends to boost its capability while China makes every effort to assist Pakistan in this sphere.
- The military nuclear industry of Pakistan used to be developed independently from its civil nuclear fuel cycle branch; Pakistan pivoted its military nuclear program on the local resources of uranium.
- Pakistan has never signed the NPT, and as many specialists mention, tends to build up its nuclear weapons. In these circumstances, it is quite challenging for Pakistan to develop its civil nuclear program, especially if we take into account that Pakistan is deprived of world trade of equipment and nuclear fuel for its nuclear power plants. Nevertheless, China is still very positive about Sino-Pakistan nuclear cooperation.[27]

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[24] Rosheen Kabraji «The China-Pakistan Alliance: Rhetoric and Limitations», December 2012, p.2 Available at https://www.chathamhouse.org/sites/files/chathamhouse/public/Research/Asia/1212pp_kabraji.pdf

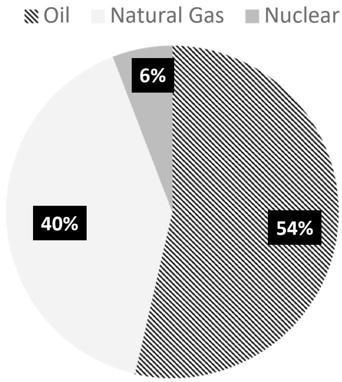
[25] http://lenta.ru/articles/2015/02/19/chinapaki/

[26] Kugelman, Michael. "Pakistan's Interminable Energy Crisis: Is there any way out?". Woodrow Wilson International Center for Scholars. Washington, DC. 2015. Pp. 157.

[27] For more details look at «WorldNuclearAssociation», available at http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Pakistan/

Figure 1

Electricity Production in Pakistan



As World Nuclear Association reports, in 2014 Pakistan produced 105 TWh of electricity. Oil sources comprised 42 TWh of the total production, natural gas sources – 26 TWh and hydro energy – 31 TWh. Nuclear power does not make a great contribution to the total electricity production, generating only 5 TWh in 2015.

Total electricity consumption in Pakistan made up approximately 84 billion kWh (including 17 per cent transmission losses). Pakistan did not imported or exported electricity. Total capacity of all the power plants in Pakistan os about 20 GWe, but usually only 12 GWe is in operation. Back in 2005, the government of Pakistan elaborated and approved an Energy Security Plan, according to which Pakistan has to modernize its power producing facilities in order to reach the level of 160 GWe of total energetic capacity by 2030. Pakistani energetic system is typically characterized as energy insufficient while load shedding is a common practice. [28]

In July 2013 the Executive Committee of the National Economic Council (ECNEC) approved 3.5 GWe of new power projects totalling Rs 1303 billion ($13 billion), comprising 2200 MWe nuclear, 425 MWe gas combined cycle, and 969 MWe hydro. This project is aimed at reducing dependence on oil and gas resources so it would be possible to reduce costs. All the initiatives put forward are tightly connected with Chinese involvement.

The main institutional body responsible for nuclear energy and conducting researches in this sphere is the Pakistan Atomic Energy Commission (PAEC). The PAEC supposedly has two major divisions which are established for developing nuclear programs: Nuclear Power Generation (NUPG) and Nuclear Power Projects (NUPP). The NUPG supervises the operational facilities while the NUPP is

[28] For more details look at «WorldNuclearAssociation», available at http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Pakistan/

managing design and construction of the units which are only planned for now. The NUPP directorate works in tight cooperation with the Nuclear Regulatory Authority (PNRA).[29]

Nuclear power in Pakistan consists of the facilities that are as follows:

The Karachi Nuclear Power Complex.

The KANUPP was constructed by the Canadian engineers in 1971, which is located 15 miles away from Karachi (the Sindh Province) The type of the reactor operating is Pressurized Heavy Water Reactor (PHWR). The KANUPP energy capacity is 137 MWe, but now it is functioning at reduced power since the PAEC is deeply concerned about its technical condition. [30]

The Chashma Complex.

The facility is situated in the northern Punjab; its capacity is 325 MWe. The type of reactors installed is two-loop pressurised water reactor (PWR). Since 2006 the facility Chashma 1 operates under the IAEA safeguards with the Chinese National Nuclear Corporation assistance.[31] The Shanghai Nuclear Engineering Research and Design Institute (SNERDI) using as a sample Qinshan 1 designed the main part of the plant. In May 2000 tt started operating and is also known as CHASNUPP 1. Designed life span is estimated to be 40 years. The Chashma 2 was set in operation in May 2001. 46 billion PKR ($860 million, including $350 million of Chinese FDI) was spent on the construction of this unit. Enriched nuclear fuel for PWR type reactors is imported from China.

Table 1

The reactors operating in Pakistan

Reactor	Province	Type	MWe net	Construction start	Commercial operation	Planned close
Karachi 1	Sindh	PHWR	125	1966	December 1972	2019
Chashma 1	Punjab	PWR	300	1993	June 2000	2040
Chashma 2	Punjab	PWR	300	2005	May 2011	2051
Chashma 3	Punjab	PWE	315	May 2011	(grid conn October 2016)	2056
Total (4)			1040 operating			

Chashma 3 and Chashma 4 Units

In June 2008 the government of Pakistan announced that there were two more units which were going to be constructed at the CHASNUPP; their total

[29] For more details look at «WorldNuclearAssociation», available at http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Pakistan/

[30] Ibid

[31] http://www.nuclear.ru/news/68665/

power capacity would make up 320 MWe. The reactor type used is CNP-300, the PWR of Chinese origin. China assumed most part of the financial burden on construction and maintenance of the project. In October 2008 Pakistan and China concluded a nuclear deal in contrast to the US-India 123 Agreement which was signed earlier in September 2008.

In March 2009 the Shanghai Nuclear Engineering Research and Design Institute declared that it kept working on the design of the third and forth power units of the Chashma Complex, while the prime contractor would be the "China Zhongyuan Engineering Corp". Later on, in April Pakistan and China closed a deal to the sum of $2,37 billion.[32]

In March 2010 Pakistan and China agreed that Chine would grant Pakistan a low percentage soft loan for 20 years. This money is to be spent on the construction of Unit 3 and 4 of the Chashma Nuclear Complex, that will comprise up to 82 per cent of the total amount of money needed for the construction. Besides that the parties negotiated that China will assume the obligation to supply enriched nuclear fuel for these units during their designed life span of 40 years.

As a result, the construction of the third unit of the Chashma Complex started in May 2011: the construction of the forth one in December 2011.

However, the NSG has expressed its concerns about the fact that China is going to supply enriched nuclear fuel for Chashma 3 and Chashma 4. As a matter of fact, the contracts for the construction of the first two power units of Chashma had been signed in 1990 and 2000 respectively, so right before 2004 when China joined the NSG. It means that since 2004 China has not been eligible for supplying this fuel to Pakistan because this country has never joined the NPT. Nevertheless, the Chinese authorities claim that Chashma 3 and 4 is a part of the whole Chashma project, so such a cooperation does not violate international law in any way.

The Chashma 5 Project

In November 2010, the PAEC was reported to conclude an agreement with the Chinese National Nuclear Corporation, under which China would take part in the development and construction of the 5th power unit of the Chashma Nuclear Complex. In February 2013, one more agreement was presumably signed. The agreement clarified that the power capacity of this unit would be up to 1000 MWe.

Some experts shared their concerns that this deal was a serious violation of the NPT as well as abuse of the NSG guidelines. In early 2013 the Chinese National Nuclear Corporation confirmed that it intended to build a new power plant in Pakistan, which power capacity would be 1000 MWe. Unsurprisingly it did not elaborated on that project and did not clarify whether it would be the 5th unit of the Chashma Nuclear Complex or just a new nuclear power plant.

[32] http://www.nuclear.ru/news/68665/

The destiny of this project is vague for now, although some researchers guess that it might be constructed in the suburbs of the city of Multan which is situated in the south-west of Punjab.[33]

Karachi Coastal Power Project

In June 2013, the Planning Commission announced that China would supply two CNNC 1000 MWe reactors to Pakistan which were going to be used for the KANUPP 2 and 3 Project. The Planning Commission planned on building of the two 1100 MWe units and considered two coastal sites for these purposes. Earlier this year CNNC announced that it would sign an agreement with Pakistan for supplying the ACP1000 (power capacity was 1100 MWe).[34] Later on the PAEC confirmed that the Karachi Coastal Power station was going to be built with its power capacity of 2,117 MWe. The total value of the project was approximately $9.595 billion with 68 per cent of this sum being vendor funding. In late August 2013, the PAEC singed a few contracts with the CNNC, China Zhongyuan Engineering Co. Ltd., Nuclear Power Institute of China and East China Electric Power Designing Institute for the construction of the Karachi Coastal Power Plant.

In November 2013, the work started next to Paradise Point 15 miles west of Karachi, but in October 2014 the high court of Sindh made a decision to halt the construction process taking into account some considerations for the environment. However, the construction process was resumed in August 2015; the engineers got down to building the first unit. It is estimated to end in 72 months.[35]

In April 2015, China Nuclear Engineering & Construction Group Co won the tender for civil engineering construction and installation work for the conventional island of the plant, which it said would use Hualong One reactors. China has handed over to Pakistan the assessment of safety of the Hualong One reactor (1161 MWs) which was going to be installed at the Karachi Coastal Power Plant. The China Zhongyuan Engineering Corporation was the general contractor of the project. [36]

The specified date of the construction of the second unit is late December 2016. Since Pakistan is not a member of the NSG it is unable to buy enriched fuel on the world market, thus Pakistan has to buy it in China.[37] China agreed to provide Pakistan with fuel supply for the whole life cycle of the facility up to 60 years.

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[33] http://www.foxnews.com/world/2013/03/21/china-pakistan-reach-controversial-deal-on-nuclear-power-plant-sources-say.html

[34] http://tribune.com.pk/story/621752/chinese-assistance-work-starts-on-nuclear-power-plant-at-karachi-shore-say-sources/

[35] http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Pakistan/

[36] Ibid

[37] http://www-pub.iaea.org/MTCD/publications/PDF/CNPP2015_CD/countryprofiles/Pakistan/Pakistan.htm

Table 2

Nuclear Power Units under Construction and Planned for Construction

Reactor	Province	Type	MWe gross	Construction Start	Planned Commercial Operation
Chashma 4	Punjab	CNP-300	340	Dec 2011	October 2017
Karachi 2 (Coastal)	Sindh	Hualong One	1161	Aug 2015	late 2021
Karachi 3 (Coastal)	Sindh	Hualong One	1161	late 2016?	late 2022
Total (3)			1501 under construction		

Due to Chinese active fostering the nuclear energy sector of Pakistani economy, on July 31, 2015 Pakistan became the first Asian member of the European Organization for Nuclear Research, CERN.[38]

What is notable here is that some Indian and American experts suppose that Pakistan will be able to build up its nuclear inventory by the end of 2020 with up to 200 warheads on board. The Times of India reports that one of the US think-tanks believe that, "Though many states are downsizing their stockpiles, Asia is witnessing a buildup. Pakistan has the fastest-growing nuclear program in the world. By 2020, it could have a stockpile of fissile material that, if weaponized, could produce as many as 200 nuclear devices."[39]

In addition, US experts Toby Dalton and Michael Krepon assert that by 2025 Pakistan may become the third nuclear state in the world regarding the number of its stockpiled nuclear warheads.[40]

The author of this paper considers that the estimations and judgments of such a kind should be taken into account with great caution, because some of them tend to be exaggerated since a great part of Indian experts conduct is politically motivated because the Indian government tends to adopt anti-Pakistan posture in its foreign policy.

As for the judgments made by some American researchers, I believe that to remain objective we have to analyze them thoroughly and take them into consideration with caution, since some of the experts are susceptible to the influence of the foreign policy line of the US Administration, which in some aspects, is not always reasonable and rational. So many Indian and US newspapers,

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38 http://www.samaa.tv/technology/2015/07/pakistan-becomes-first-asian-member-of-cern/

39 http://timesofindia.indiatimes.com/world/pakistan/Pakistan-to-have-200-nuclear-weapons-by-2020-US-think-tank/articleshow/45250170.cms

40 Toby Dalton and Michael Krepon "A Normal Nuclear Pakistan",Stimson Center and Carnegie Endowment for International Peace, 2015 http://www.stimson.org/images/uploads/research-pdfs/NormalNuclearPakistan.pdf

magazines, TV channels etc. [41] have covered Dalton and Michael Krepon's research, thus I think that this paper has to be paid special attention to.

Hence, I am convinced that such estimates seem to be exaggerated to some extent and I am going to elaborate on my reasoning with the following arguments:

- In fact, Pakistan and India possess approximately the same amount of nuclear warheads (the difference in about 10 warheads has to be a margin of error). As the US State Department says in October 2015 Pakistan and India possessed about 110 and 100 warhead respectively. In this way, Pakistan needs this arms race very unlikely, neither from the political, nor from the economic perspective.
- The historical experience teaches us that an arm race of any kind is very likely to entail considerable exhaustion of the resources of the economy. Moreover, a government tends to be plaqued by chronic myopia, which poisons the process of rational decision-making.
- The economy of Pakistan is quite vulnerable; just take a closer look at the nuclear sector which this paper has been discussing. A wide range of the private and governmental institutions of China funds all major nuclear projects in Pakistan. Chinese aid comprises on the average up to 82-85 per cent of the total cost, which indicates that in many ways Pakistan is unable to maintain its nuclear power facilities in a proper way. In April 2015 Pakistan and China agreed that China would be going to invest as well in Pakistani transport infrastructure as in its energy sector of economy more than $46 billion per year for the next 15 years.[42] This sum comprises 20 per cent of GDP of Pakistan per year.[43] Hence, I believe that the point of view that Pakistani economy is capable of handling this arm race on its own does not look much reasonable.
- Hypothetically thinking, if Pakistan was actually bent on building up its nuclear inventory as American experts assert, it would definitely trigger a great feeling of concern among the entire international community, including the US (which provides Pakistan with considerable economic and military aid), Russia, China and India. That would immediately deteriorate the relations not only between Pakistan and its main opponent, but with its allies as well. It would also tarnished Pakistani record in the world arena. In this circumstances, the US and China would not risk waging any conflict in the region so they would reduce the amount of their aid to Pakistan or even call a halt to it at all.

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[41] http://timesofindia.indiatimes.com/world/pakistan/Pakistan-to-have-200-nuclear-weapons-by-2020-US-think-tank/articleshow/45250170.cms, http://thediplomat.com/2015/08/time-for-pakistan-to-change-its-nuclear-strategy-experts/

[42] http://www.nytimes.com/2015/04/20/world/asia/chinas-president-heads-to-pakistan-with-billions-in-infrastructure-aid.html?_r=0

[43] http://money.cnn.com/2015/04/20/news/economy/pakistan-china-aid-infrastucture/

- China would not feel comfortable to have such a serious nuclear threat right to its door step, with Pakistan going to build up more nuclear warhead than China possess itself.

Then a logical question appears – why has this statistic been exaggerated to such extent that it was discussed almost in each newspaper or on TV channel in South Asia and in the West?

It appears to be done with a view to pressing on Pakistan by both political and non-political means, so it would force Pakistan to act the way the US wants it to. The bilateral meeting between President Barack Obama and Prime Minister Navaz Sharif actually gives us some kind of indirect evidence with may possibly prove this point of view. During this meeting President Obama expressed his profound concern about the development of Pakistan's nuclear program.[44] Moreover, it does seem like the US displays its reluctance to make the same deal with Pakistan as it did with India before (the 123 Agreement). The American establishment is not ready to see Pakistan as a trustworthy partner in terms of the possibility of bilateral nuclear cooperation.

Conclusion

- **The Chinese interests.** India is a key opponent of Chine in the regional context. Many experts point out that China has become very concerned about India's self-sentiment, 'self-positioning' not only as a regional power, but also as a new emerging world power. Prime Minister of India Narendra Modi, delivering his speech at the UN General Assembly session on the occasion of UN 70 years anniversary, made himself quite clear when he said that India is an important player not only in the region, but in the international arena as well. The unresolved territorial disputes still poison Sino-Indian relations, so Beijing uses its cooperation and friendship with Pakistan to counterbalance India's claims for regional hegemony.
- One more reason why China is so passionate about fostering Pakistan's economy and modernizing its military forces is that China seeks to tilt the US political clout in this region. China usually obtains an economic method in its foreign policy towards Pakistan with China avoiding direct pressuring on Pakistan unlike the US. This makes an impression that China keeps assisting Pakistan and adjusts takes up it wait-and-see position, waiting till the US influence on Pakistan decreases to that extent that China would be able to use as well political as economic tools in its relations with Pakistan if needed.

[44] http://www.reuters.com/article/2015/10/23/us-usa-pakistan-idUSKCN0SG29020151023

- The scale of Chinese influence of the nuclear sector of Pakistan's economy is tremendous. The Chashma Project, the Karachi Coastal Project, the construction of the nuclear power plant near the city of Multan – all that is a big Chinese project. All of the, are funded by China with FDI or preferential loans, comprising 82-86 per cent of the total cost of each project.
- It is too difficult to say for sure that it was China, which handed over all the nuclear military technologies required to develop any kind of nuclear weapons, since almost all the data still remains clandestine. If we are pivoting on the experts' assumptions and guess thinking, so it is believed that it was China who "gave an atomic bomb to Pakistan", mostly because the West rejected cooperation with Pakistan because of some concerns regarding its military nuclear program. Some of these concerns have proved to be correct.

The nuclear energy of Pakistan for now is not a key element in total electricity production, although if Pakistan keeps developing its nuclear sector and building more nuclear plants it may assist in resolving Pakistan's energetic crisis.

*Vitaly Kandalintsev**

BRICS: a Comparative Analysis of the Investment Climate

Abstract: Analysis and comparison of the main components of the investment climate in BRICS countries can improve the understanding of factors, which form an attractive environment for foreign direct investment (FDI). The article uses the author's model of the investment climate, consisting of ten components, and research data of international organizations.

Key words: investment climate, BRICS, FDI inflow, competitive advantages, problematic areas of doing business.

The investment climate has a significant impact on foreign direct investment (FDI) in host countries. For its evaluation, the author applies the index consisting of ten components. Improving each of these components significantly contributes to the attractiveness of investing:

1. *The growing size of the market* reduces the cost due to economies of scale, allows for a more flexible strategy due to the greater segmentation of the market.
2. *The increased openness of the economy* expands the number of sectors and industries open to FDI, reduces the ceiling on foreign participation in equity.
3. *Infrastructure development* – allows to reduce production costs and to increase production capacity, connects markets and spheres of economic activities, improves access to facilities and buildings.
4. *Improving the quality of labor* allows to implement technologically complex projects and to improve the quality of the products.
5. Maintaining the relatively low costs of labor creates benefits in price competition.
6. *The strengthening of investment protection* – stimulates the growth of FDI and transfer of technology.
7. *Risk mitigation* – involves the investment of risk-sensitive investors.
8. *The development of financial markets* expands the possibilities for financing projects through the national banking system and stock markets.
9. *Reducing the tax burden* – increases the profit after tax and expands the possibilities of reinvestment and profit distribution depending on the priorities of investors.
10. *Improving the quality of the regulatory environment* – reduces the time and cost of establishing a fully functioning enterprise.

Below are data on the investment climate in the BRICS countries.

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Investment climate

The index of investment climate

In the overall favorability of the investment climate, the BRICS countries are pretty close to each other (see Table 1). Brazil, Russia and India have practically the same index of investment climate. From them only slightly behind is South Africa and a little more – China. However, the positions of countries in the index components are significantly different. First and foremost, you can mark certain ratios, which are separate components.

First, the market size and the openness of the economy are in reverse ratio. I.e., the larger the market size, the more selective the certain country tends to come to open its economy to FDI and, consequently, the smaller is the openness of the economy. So, of the five BRICS countries China has the highest market size and the least openness of its economy. On the contrary, South Africa has the smallest value of the market and greater openness of the economy.

Second, the level of risk affects the degree of investment protection. The higher the risk, the less reliable is investment protection. The greatest risks exist in China and Russia, and these countries have the smallest degree of investment protection. Three other countries – Brazil, India and South Africa – have considerably lower and approximately the same level of risk, and a higher level of investment protection. The variation of the index of investment protection in these three countries indicates that the quality of legal and other protection of FDI can offset some of the risks (as in India, which investment protection indicator is better than indicator of risk). Or, on the contrary, it can create additional vulnerability (as in Brazil, where indicator of investment protection is worse than indicator of risk).

Table 1

The index of investment climate in the BRICS countries, 2016

	Brazil	Russia	India	China	South Africa
Market size	8,29	8,43	9,14	10,00	7,00
Openness of the economy	9,00	8,20	7,40	5,80	9,40
Infrastructure	5,57	6,86	5,29	6,71	5,86
The quality of labor resources	6,46	7,75	5,76	6,70	6,05
The cost of labor	9,44	8,57	10,00	9,31	7,32
Investment protection	6,30	5,10	7,30	4,50	6,80
Risks	7,00	5,20	7,00	5,00	6,90
Financial market development	5,71	5,00	5,86	5,86	7,14

	Brazil	Russia	India	China	South Africa
Tax burden	4,70	6,20	5,14	5,80	5,80
Regulatory environment	5,77	7,09	5,47	6,29	6,49
THE INDEX OF INVESRMENT CLIMATE (WEIGHTED AVERAGE)	7,04	7,04	7,06	6,85	6,96

Source: calculated by the author based on [1],[2],[3],[4],[5].

Thirdly, in the ratio of the level of quality of labor resources and the cost of labor there is generally a direct correlation. For example, India has the lowest quality of labor resources and the lowest costs of labor in the BRICS. Russia has the highest quality workforce and the relatively high level of expenditure on labor costs (which are higher only in South Africa). China and Brazil demonstrate the average quality of the labor force and reasonable costs of labor. South Africa stands somewhat apart. In this country the quality of workforce is only slightly higher than in India, but the salary is the highest in BRICS.

Fourth, in all five countries the indicator of regulatory environment is higher than that of rate of tax burden; the higher the quality and efficiency of the regulatory environment are, the lower tax burden is. Therefore, Russia has the best regulatory environment and the lowest tax burden in BRICS. On the second and third place in the regulatory environment are South Africa and China, these two countries share second-third places on the tax burden.

Ranking

The ranking of the countries under consideration for the individual components of the investment climate is as follows:

Market size. 1st place – China 2nd place – India, 3rd place – Russia, 4th place – Brazil, 5th place – South Africa.

Openness of the economy. 1st place – South Africa, 2nd place – Brazil, 3rd place – Russia, 4th place – India, 5th place – China.

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[1] Global Competiveness Report 2015-2016. /ed. by Klaus Schwab/. Geneva, World Economic Forum, 2015.

[2] Data on the index of regulatory restrictions to FDI // the OECD website - http://www.oecd.org/investment/fdiindex.htm.

[3] The Human Capital Report 2015. World Economic Forum, 2015.

[4] Data on average wages in the countries of the world // statistics website - http://www.statista.com/statistics/226956/average-world-wages-in-purchasing-power-parity-dollars.

[5] Data on the index of political risk in the countries of the world // the website of the PRS Group - https://www.prsgroup.com/category/risk-index.

Infrastructure. 1st place – Russia, 2nd place – China, 3rd place – South Africa, 4th place – Brazil, 5th place – India.

Quality of labor resources. 1st place – Russia, 2nd place – China, 3rd place – Brazil, 4th place – South Africa, 5th place – India.

Cost of labor. 1st place – India, 2nd place – Brazil, 3rd place – China, 4th place – Russia, 5th place – South Africa.

Investment protection. 1st place – India, 2nd place – South Africa, 3rd place – Brazil, 4th place – Russia, 5th place – China.

Risks. 1st and 2nd places - Brazil and India, 3rd – South Africa, 4th place – Russia, 5th place – China.

Financial market development. 1st place – South Africa, 2nd and 3rd places are shared by China and India, the 4th place – Brazil, 5th place – Russia.

Tax burden. 1st place – Russia, 2nd and 3rd places are shared by China and South Africa, 4th place – India, 5th place– Brazil.

Regulatory environment. 1st place – Russia, 2nd place – South Africa, 3rd – China, 4th place – Brazil, 5th place – India.

These data allow to judge about the competitive advantages of the countries concerned, which underlie their strategy to attract foreign direct investment (FDI).

COMPARATIVE COMPETITIVE ADVANTAGES

Brazil

Among BRICS countries, Brazil has high openness, low risk and good ratio of labor resources quality and cost of labor. These attractiveness factors are interrelated. The high openness of the economy allows foreign capital to operate in a wide range of industries, and low risks extend the range of foreign investors willing to implement projects. Good ratio of labor resources quality and cost of labor allows to maintain the efficiency of FDI projects in labor-intensive industries that require limitations of wages growth and technologically complex sectors that need highly qualified personnel.

However, FDI inflows to the country are constrained by the highest in the BRICS level of taxation and less strong positions in such realms as market size, infrastructure, financial market development and regulatory environment (Brazil there has the penultimate fourth place in the BRICS).

Russia

Russia leads in four of the ten components of the investment climate: infrastructure, quality of labor resources, ease of tax burden and regulatory environment. However, in such important components as market size and openness of the economy, the country is in the middle of the list (third place). This suggests that the investment climate in Russia is able to attract FDI that are focused on geographically broad markets, rather complex and high-tech production, reinvestment of profits and branch/public network. However, due

to restrictions on FDI and average by the standards of the BRICS market, these opportunities are moderate.

The situation is complicated by weak financial market development (5th place) and quite significant risks (4th place), which are also aggravated by the sanctions of Western countries.

India

The country is a leader in low cost labor resources, protection of investments (1st place) and risks (shares 1st-2nd places with Brazil). India holds a strong 2nd place in terms of market size. This structure of competitive advantages in the field of investment climate shows significant potential for attracting FDI in labor-intensive industries and businesses oriented on the domestic demand. India is also attractive for investors focused on long-term projects and moderate risks.

Nevertheless, there are notable problems. The country occupies the last 5th place in the BRICS in infrastructure, quality of workforce and regulatory environment. Not too strong positions India has in openness of the economy (4th place) and ease of tax burden (4th place). Therefore, the investment climate in this country is dualistic in nature: along with the great opportunities it also creates great barriers.

China

China has leadership in the most important component – market size. It is the size of the market caused a strong attraction for FDI in China. However, it should be noted that in infrastructure and labor resources quality, the country has a strong 2nd place in BRICS, and divides 2-3 places in financial market development and tax burden. All of this suggests strong competitive advantages of China and its potential to attract large amounts of FDI.

The main constraints are openness of the economy and investment protection, in which China occupies the last 5th place in the BRICS.

South Africa

The country is a leader in openness of the economy and financial market development, ranked 2nd in investment protection and regulatory environment and shares the 2-3 places in ease of tax burden. The structure of competitive advantage is characteristic for smaller countries: the focus is on wide availability of the spheres of investments, support of investment process by the financial sector, tax incentives, maximum comfort in legal procedures and protecting the interests of the investor.

South Africa is behind the other BRICS countries in terms of market size and low cost labor resources, has a low 4th place in labor force quality. The ratio of labor resources quality and cost of labor in the country is most problematic in the BRICS. It does not support sufficiently neither labor-intensive nor technologically advanced industries.

FDI Inflow

Inflow volume

In a sense, the amount of FDI is "real" or "objective" assessment of investment climate in the country concerned. This assessment is not exhaustive, since FDI is strongly influenced by cyclical factors in the world economy and geopolitical situation. Therefore, the dynamics of the incoming flows of FDI need to be evaluated comprehensively.

As can be seen from table 2, in the period from 2010 to 2015, FDI inflows to the BRICS countries almost stabilized. However, the largest recipient of FDI – China – shows all the same some increase. This again suggests that market size is a priority component of the investment climate, which is able to compensate for even weaker positions in other separate components.

Table 2

FDI inflow in BRICS countries, million us dollars.

	2010 г.	2011 г.	2012 г.	2013 г.	2014 г.	2015 г.
Brazil	83 749	96 152	76 098	53 060	73 086	64 648
Russia	31 668	36 868	30 188	53 397	29 152	9 825
India	27 417	36 190	24 196	28 199	34 582	44 208
China	114 734	123 985	121 080	123 911	128 500	135 610
South Africa	3 636	4 243	4 559	8 300	5 771	1 772
Total:	261 204	297 438	256 121	266 867	271 091	256 063

Source: World Investment Report 2016. Investor Nationality: Policy Challenges. UNCTAD, Geneva, 2016.

More complicated the situation is with Brazil, which is in second place in the BRICS by the volume of attracted FDI. The maximum achieved in 2011 is almost 1.5 times higher than the figure of 2015. It is likely that Brazil will need some years to return to maximum values of FDI inflows. In the face of world growth slowing (not to mention the crisis) such components of investment climate as openness, good ratio of labor resources quality and cost of labor, investors protection, which are characteristic of Brazil, tend to play a lesser role than the market size. Therefore, Brazil may in terms of the volume of attracted FDI be closer to China mainly in periods of favorable world market.

In 2014 India came on the third place. Like China, India had the growth of FDI in recent years. As in China, this growth is due primarily to the significant size of market in the country. In India, however, there is another important component working effectively in a downturn of the world market – low costs of labor. India is successfully reducing the large gap in FDI inflows as compared with China – from more than five-fold gap in 2012 to approximately triple one in 2015.

In 2014-2015 Russia has experienced a dramatic decline in FDI inflows. A crucial role in it was played by the fall in oil prices and the complication of the geopolitical situation of the country, which entailed the introduction of Western countries anti-Russian sanctions. But the investment climate of Russia is quite competitive in the BRICS. Therefore, the fixing of oil prices above $60 per barrel and the lifting of sanctions can help the country to continue attracting FDI.

South Africa is characterized by strong fluctuations in FDI inflows from year to year. Thus, in 2010-2013, the inflow increased in the country 2.3 times, and for 2013-2015, fell 4.7 times. There is a strong dependence on the global cycle, immediate and dramatic reaction of FDI inflows to the deteriorating market conditions and falling raw material prices, which affect the main investment sector of South Africa – mining industry. The parameters of the investment climate of the country do not allow to absorb the external shocks because the competitive advantages of South Africa are just associated with the maximum openness of the economy, and the size of the market is the smallest in the BRICS.

Rating from investors

Assessment of business conditions in the recipient countries, generated by surveys of foreign companies' representatives working in the BRICS countries, in General confirms, but also supplements and updates the index the investment climate. Table 3 summarizes survey data of the World Economic Forum for the most problematic areas of doing business. It follows that in all the BRICS countries there are significant concerns of the business community with the problem of corruption. Mostly acute this problem is perceived in Brazil, and the least – in China. Other items of the questionnaire display the greater dispersion.

If you select the five most problematic areas in each BRICS country, the situation looks as follows. In Brazil, the 1st place is occupied by tax rates, 2nd place – corruption, 3rd place – tax regulations, 4th place – inefficient government bureaucracy, 5th place – policy instability.

Table 3

Most problematic factors for doing business, 2016.

	Brazil	Russia	India	China	South Africa
Tax rates	15,9	13,3	9,6	7,8	2,6
Tax regulations	12,5	7,7	11,7	7,5	0,8
Corruption	13,6	10,9	10,9	7,9	12,3
Inefficient government bureaucracy	11,9	6,0	3,5	8,7	17,7

	Brazil	Russia	India	China	South Africa
Policy instability	9,2	6,7	3,6	8,8	12,8
Restrictive labor regulations	8,7	2,7	4,4	4,0	17,5
Inadequate supply of infrastructure	7,8	4,3	4,2	6,8	4,2
Inadequately educated workforce	4,8	4,6	2,5	4,8	12,9
Access to financing	3,4	10,7	2,8	10,8	1,8
Government instability	3,4	3,1	5,7	4,0	1,5
Insufficient capacity to innovate	2,8	3,6	7,3	6,7	0,2
Inflation	2,5	13,8	7,4	8,4	1,7
Poor public health	1,7	1,0	8,5	2,8	0,6
Poor work ethic in national labor force	0,9	3,6	6,0	5,0	4,8
Crime and theft	0,8	2,9	7,4	1,9	6,9
Foreign currency regulations	0,2	5,2	4,6	4,0	1,7

Source: Global Competiveness Report 2016-2017. /ed. by Klaus Schwab/. Geneva, World Economic Forum, 2016.

In Russia: 1st place – inflation, 2nd place – tax rates, 3rd place – corruption, 4th place – access to financing, 5th place – tax regulations. It can be noted that the surveys show a worst performance of Russia in the field of tax rates as compared with evaluation given in the index of investment climate. This is partly due to the fact that the index in question takes into account only data on corporate taxes and indirect taxes, while in Russia are also important other taxes and contributions (e.g., contributions to social insurance funds). In addition, the perception of the tax burden is influenced by profitability of businesses: the same rate of corporate tax may be perceived as high for low-profit businesses and reasonable or even low for high-profit ones. Amid falling oil prices and Western sanctions the profitability of foreign companies in Russia was reduced.

India: 1st place – tax regulations, 2nd place – corruption, 3rd place - tax rates, 4th place – poor public health, 5th place - crime and theft.

China: 1st place – access to financing, 2nd place – policy instability, 3rd place – inefficient government bureaucracy, 4th place – inflation, 5th place – corruption.

South Africa: 1st place – inefficient government bureaucracy, 2nd place – restrictive labor regulations, 3rd place – inadequately educated workforce, 4th place – policy instability, 5th place – corruption.

As can be seen from the above data, the perception of business community holds tax rates and tax regulations as very problematic areas in three countries – Brazil, Russia and India. Inflation is perceived as the main problem in Russia. The inflation factor falls into the top five problem areas in China as well, but it ranks only fifth. The inefficiency of government bureaucracy is strongly emphasized as the main problems in South Africa, but also is noticea-

ble in the survey data for China. Access to financing is perceived by investors as a major problem only in China. It is of importance also in Russia (fourth place).

Only in South Africa such problem areas as restrictive labor regulations and inadequately educated workforce are of great importance. In other BRICS countries, these areas were not included in the top five. And only in India among the first five areas of concern there are poor public health, and crime and theft.

Generally speaking, from the point of view of investors, the most typical country of the BRICS is Brazil. In this country the five most problematic areas at the same time rank among the five most problematic areas of the other BRICS countries. In other words, Brazil is kind of a mirror for BRICS. Its antithesis, in a sense, is South Africa. In South Africa the two most important problem areas are not among those ones in the other BRICS countries. Therefore, South Africa is the most specific BRICS country. Russia, India and China combine typical and specific problem areas, but they have only one specific problem area for each country.

Bibliography:

Global Competiveness Report 2015-2016. /ed. by Klaus Schwab/. Geneva, World Economic Forum, 2015.

Data on the index of regulatory restrictions to FDI // the OECD website – http://www.oecd.org/investment/fdiindex.htm

The Human Capital Report 2015. World Economic Forum, 2015.

Data on average wages in the countries of the world // statistics website – http://www.statista.com/statistics/226956/average-world-wages-in-purchasing-power-parity-dollars

Data on the index of political risk in the countries of the world // the website of the PRS Group – https://www.prsgroup.com/category/risk-index

World Investment Report 2016. Investor Nationality: Policy Challenges. UNCTAD, Geneva, 2016.

Global Competiveness Report 2016-2017. /ed. by Klaus Schwab/. Geneva, World Economic Forum, 2016.

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Turkey and Japan: Partnership is Gaining Strength

Abstract: The article deals with the main events and problems in the political and economic relations between Turkey and Japan. Special emphasis was placed on analyzing the motives of the both countries in developing bilateral relations. An active political dialogue between Turkey and Japan is a solid base for the development of efficient trade and investment cooperation. The strategic partnership which was achieved between the two countries during the AK Party's rule succeeded in construction of Marmaray tunnel and Izmit bridge as well as starting the construction of Sinop nuclear station. Economic cooperation is expected to continue in the area of aerospace industry, aviation and defense industry. Although bilateral political and economic cooperation have huge potential for growth there are some limitations in cooperation on regional and international issues between Ankara and Tokyo. Two countries have different approaches considering the problem of Syrian refugees and territorial disputes between Japan and China as well as disputes between Japan and South Korea. An active political dialogue between Turkey and Japan is a solid base for the development of efficient mutual trade and investment cooperation in the nearest future. It could be provided by the implementation of governmental long-termed strategies and projects. Authors come to the conclusion that mutual understanding in definite political issues and the vast complementary economic potential of the two countries are beneficial for both Turkey and Japan.

Key words*:* Turkish-Japanese relations, Japanese investment, Sinop nuclear station, Marmaray tunnel, strategic partnership.

Russia being a Euroasian state needs to take into account the geopolitical situation in the region. For the development of its Far Eastern areas it is necessary to establish close integration and cooperation with the Far Eastern countries and particularly with Japan which is one of centers of power. At the same time in order to provide its national security it is important to widen its coordination with the Middle Eastern countries, firstly with Turkey.

The analysis of emerging strategic partnership between Turkey and Japan, to our point of view, gives the possibility to coordinate Russian foreign policy with the other centers of power.

Currently we can distinguish trends of multipolar world order where besides the USA – the main Japanese strategic partner – there are other countries playing a significant role in the world's politics and economics. Japan faces the challenge of adapting to fast changing balance of power in the international relations.

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After AK Party came to power in Turkey in 2002 there have been seen new trends in Turkish foreign policy which can be characterized by three factors: awareness of a new Turkish role in world's politics; its ambition to normalize relations with the other countries and to strengthen its position in neighboring regions. Having announced the 'multi-vector principle' of its foreign policy Turkey intends to maintain diplomatic relations with global actors to construct a complementary system of international relations. The demand for activation of the Turkish-Japanese relations has been affected by the US. Thus, it is quite obvious that apart from geopolitical interests of the USA there is a mutual objective requirement for development of bilateral relations between Turkey and Japan.

Historical ties

Turkey and Japan have relations rooted in history. 2014 year was the 90th anniversary of the establishment of diplomatic relations. After the Republic of Turkey was founded, on the 29th of October 1923, Japan established regular diplomatic relations with the country. In 2015 was the 125th anniversary of the disaster of the Ertugrul Frigate. In 1890 Ottoman Sultan Abdulhamid II sent a medal with the Frigate commanded by Osman Pasha to be delivered to Japanese Emperor Meiji. On the return trip the Ertugrul Frigate carrying the Turkish delegation on board was caught in a storm and sank off the Japanese coast. The crew originally consisted of 540 people. But just 69 of them were rescued.

As a result of these anniversaries many events were organized in cities across Turkey and Japan during 2014 and 2015.

Among the milestones of the Turkish-Japanese relations we can mention the proposal of Japanese Foreign Affairs Minister M. Terashima of establishing diplomatic relations between Japan and Turkey in 1875; the decision to improve relations by signing the Japan-Ottoman Treaty of Friendship in 1893.

However, we can state that Turkish-Japanese relations were framed only in the early days of the Turkish Republic. The proof of this were the negotiations on the establishment of the Japan-Turkey Foreign Trade Association in 1925 and the opening of the Japanese Embassy in Istanbul and Turkish Embassy in Tokyo in 1925. The Japanese Trade Exhibition was opened in Istanbul in 1928 and lasted till 1937 thus starting bilateral trade relations. In October 1930 the first Japanese-Turkish Commerce and Navigation Treaty was signed the aim of which was to promote political relations.[1]

Since then the relations between the countries have been developing slowly and unevenly. The political, economic and cultural relations haven't reached the level that would correspond to the relevance of the both countries regarding that political relations fell behind economical in the global power struggle.

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[1] www.mofa.go.jp/region/middle_turkey/japan-turkey relations. basic data.

Activation of bilateral relations

An important event was the visit to Japan of the Turkish Prime Minister T. Ozal in May 1985 the main aim of which was to intensify bilateral trade and Japanese investment.

Turkish political and business circles were mostly interested in

- increasing of bilateral trade which would provide Turkey with essential market opportunities and would extend the import of Japanese high quality goods;
- raising Japanese loans and direct investment, modern technology that would promote the economic development and enhance the production quality;
- establishing of joint ventures including those in third countries.

According to O. Olchmen, a board member of Association of Turkish contractors, "Turkish-Japanese joint companies based on Japanese technology and Turkish engineering abilities could succeed in doing business in countries of Middle East as well as countries of North Africa and later in America".[2]

According to "The Middle East Economic Digest" "Japan could have balanced the Turkish relations with European countries and the USA. That could let Turkey pursue an independent economic and trade policy."[3] Japan supported the Turkish decision to enter EU. In the opinion of former Japanese ambassador to Turkey K. Vati, "The Turkish Republic is an important chain between Europe and Islamic countries and its participation in EU could be a symbol of peaceful coexistence of the West with Islamic world". Though, he added "Japan unfortunately is unable to hasten the process of Turkish admission to EU but it supports Ankara in this question".[4]

Economic cooperation

As for Japan's interests in cooperation with Turkey firstly we should mention economic and trade relations which are strengthened by geographical proximity of Turkey to Europe and Middle East markets. According to K. Vati, Turkey obtains a rising market and possibilities regarding its competent admission to EU in future as well as high level of economic and political relations with Islamic countries .[5]

However Japanese entrepreneurs highlighted some hardship obstacles which restrained the bilateral relations. That's why Tokyo had been cautious about making big investments in Turkey.

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[2] Milliet.27.11.1987.

[3] The Middle East Economic Digest. 1 February 1984, p.24

[4] Milliet.27.11.1988.

[5] Ibidem.

One of the former Chiefs of Japan Business Federation (Keidanren) M. Mioshi summarized these obstacles. ”Turkey is lacking its basic infrastructure – there are problems with energy, transport, communication. Its financial – credit system isn't flexible enough, rates of interest are excessive. In Turkey the main importance is attached to underdeveloped regions of the country, whereas Japanese companies prefer to invest in cities such as Istanbul and Izmir.[6] According to his opinion, one more negative factor is the lengthy transportation by sea (45 days) of agricultural production that complicates its shipment. Attempts to implement it via the Soviet Union's territory have failed.[7]

Another factor affecting the Japanese investment in Turkey was political instability in the country caused by the complicated political process before the coup d'état in 1980. At the same time the stabilization period due to the political and economic reforms carried out be the Prime Minister of Turkey T. Ozal in late 80s- early 90s has become a significant factor contributing to the intensification of bilateral relations.

Another milestone in the relations between the two countries was the construction of a new bridge over Bosporus in Istanbul with the assistance of Japan. Its completion in 1988, in the opinion of Japanese political and business circles, "has become the realization of high-level Japanese technology as well as Turkish-Japanese friendship". The bridge "Fatikh" was constructed by the syndicate of Japanese, Italian and Turkish companies. Its' cost was $551 ml. The money was provided by Japanese banks at low interest rate. This bridge was constructed 6 months earlier than planned.[8] The General Manager of the project M. Ueda emphasized the benefits of the construction. "Linking the two continents has relieved the transportation system of Istanbul and provided a bypass circle road for freight traffic between European and Asian parts which would contribute to further economic development of Turkey".[9]

Friendly relations between Japan and Turkey were demonstrated when Japan provided a large scale economic and technical aid after the earthquake in Turkey in 1999. The Japanese government sent several rescue teams; 500 prefab houses were rendered and within the aid program the Japanese government granted $1 ml 600 thousand which accounted for the purchase of medicine, medical equipment, tents and blankets.[10]

After signing in 2003 the Plan for development of bilateral relations, the year 2006 was announced as 'the year of Turkish culture' in Japan. The exchange of official visits of the Prime Minister of Japan Dz. Koizumi to Turkey and the Pres-

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[6] Milliyet. 27.11.1987.

[7] Turkish Daily News.21.11.1988.

[8] Ibid,02 - 03.07.1988.

[9] Turkish www Daily News.21.11.1988.

[10].tr.emb-japan.go.jp/T.02/01html

ident of Turkey A. Gul to Japan in 2006 contributed to further development, firstly, of economic relations and particularly investment.

Japan is the 6th among major investors to Turkey[11] and the 1st among Asian countries-investors.[12] In 2014 Japanese investment to Turkey amounted to $1.4bl[13] 29 per cent of which falls on car production and 18 per cent – on finance.[14] Since 1990 "Toyota Turkey" has been operating in the country – the leader in Turkish export and the largest company in Turkey. The company provides 20 per cent of car production in European countries and due to its production figures it took the 3rd place in Europe in 2015.[15] At present apart from such giants as "Toyota", "Isuzu", "Honda" there are a lot of Japanese companies operating in energy and chemical industry.

Japanese companies have been presented in the Turkish market since 1970 in the following fields: bridge construction, developing of drinking water system in the capital Ankara, implementation of commuter trains.

Herewith we should acknowledge the 'one-way' tend of investment, e.g.– from the Japanese side. As far as investment from Turkey is regarded it is rather difficult to distinguish Turkish companies carrying out business projects in Japan. This is due to some objective reasons. In the opinion of a Turkish researcher of Strategic Center "Bilgesam "Y. Diril not only Turkey but other countries as well face limitations in investing in Japan. "Foreign companies aiming to enter the Japanese market should follow the rules of the Japanese structure of business and account such points as the cost of labor force, taxes etc."[16] According to "Bilgesam" Turkish companies are represented in Japan in restaurant business, souvenirs sale, carpet sales and cleaning".[17]

The trade volume between the countries stood at $3.6 billion in 2015[18] mostly in favor of Japan. Turkey's exports include fish, pasta, tobacco and knit goods and its imports – automobiles, automobile parts, steel plates and construction equipment, such as bulldozers, diggers and excavators. The economic relations mainly rely on Japanese exports to Turkey. However Turkey's exports to Japan have risen from $234 million to $375 million in the last ten years, making a 60 per cent increase.[19] Such a low level of trade volume has always

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11 JETRO Global Trade and Investment Report 2014. Available at: http://jetrogo.jp/en/reports/white_paper

12 www.ey.com/GL/en/Newsroom/News-releases/News/Foriegn-investment-in-turkey-doubles-in-last-five-years

13 asialawportal.com/2014/11/27/japan-andturkey-seizing-the-potential-for-growth

14 www.ey.com/GL/en/Newsroom/News-releases/NewsForeign-investment-in-turkey-doubles-in-last-five-years

15 http://www.trdefence.com/?p=3176

16 www.bilgesam.org/incele/88turkie-japonia-ilskeleri

17 www.bilgesam.org/incele/88turkie-japonia-ilskileri

18 www. mofa.go.jp/region/middle_e/turkey/index.html

19 http://dippost.com/2015/10/07/turkey-eyes-trade-boost-as-erdogan-heads-to-japan/

been a matter of concern of two countries as it doesn't reflect their real potential. That's why both countries consider the future conclusion of the Agreement on economic cooperation between Turkey and Japan a forwarding step in laying the groundwork for mutually beneficial trade relations as well as reducing the misbalance of bilateral trade[20].

Japan has very strict requirements concerning import from the other countries in comparison with Turkey. As Turkish specialists point out, "In order to export to Japan apples they should be of excellent quality in the sense of taste, flavor, external appearance and packaging".[21] Besides, Japan prefers to import goods from the neighboring countries such as China and from ASEAN countries. Moreover, Turkish exporters consider going through the procedure of standardization, certification and labeling rather unprofitable. One of the main problems is the product inspection of agricultural goods before importing them into the country from the point of view of using chemicals. Apart from special quotas for articles of food Japanese customs runs strict control of imported goods. As Y. Diril points out, "in case of any defective fruit the whole consignment is rejected. 25 per cent of the population in Japan are elderly people who tend to lead a healthy style of life, so they required condition for importing food as healthy nourishment".[22]

In opinion of Y. Diril ,“ in doing business with the Japanese the problems of trust and patience are of great importance. Unless your Japanese partners trust you and are convinced in the high quality of the product you can't implement even the most attractive business project".[23] Turkish companies are more peculiar about so called 'light' attitude when you get to know your partner through trade and only after that build trust.

However at present Japan has changed its attitude to foreign investment and has undertaken some incentives for stimulation and simplification of foreign investors' activity. In particular it has been reflected in liberalization of importing of grapefruits and hazelnuts from Turkey. But still we can't expect fast changes in the Turkish investors' activity in Japan.

In this sense it is suggested that Japan may benefit from the advantages of Turkey. It may penetrate the markets of the Middle East where Turkey is playing a key role.[24] The web-site of the Ministry of Foreign Affairs of Japan pays great attention to Turkey emphasizing its role in Japan's efforts in attainment of its interests in the Middle East.[25]

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[20] dippost.com/2014/011/07/turkish-japanese-trade-volume-not-enough-turkish-pm/

[21] www.bilgesam.org/incele/88turkiye-japonia-iliskeleri

[22] Ibidem.

[23] Ibidem.

[24] Katakura K. Japan and the Middle East: towards a more positive role. Available at: http://books.google.ru/books?id=&3VaYSE6XAC&pg=PAZ7&dq=K.Katakura.+Japan+and+yje|middle+east+towards+a+more+positive+role

[25] www.mofa.go.jp/region/middle_e/turkey/index.html

Mutual projects in the third countries

Cooperation between Turkey and Japan is not limited to Turkey and Japan. Mutual projects in the third countries, especially in the Central Asian countries, is a new form of cooperation between the countries. For example, Turkmenistan has become of great interest to Japan as it obtains a great advantage – the presence of Turkish stratum that could promote Japanese status in the Central Asia. An additional factor is the fact that most of the Turks living in Turkmenistan have dual citizenship.

Turkey in its turn supports Japan's influence in Turkmenistan by implementing business projects as well as lobbying Japan's activity in the country mainly with Turkish enterprises. Turkish contractors take part in largescale projects which are financed by Japanese companies. For example, a Turkish company "Chalik" constructing the largest in the Central Asia cotton plant is providing intermediary services in provision of Japan's equipment and components for the cotton processing.[26]

In 2014 the Japanese-Turkish syndicate including the Japan's *"Kawasaki Heavy Industries"* and Turkey's *"Ronesans Turkmen"* started constructing gas-chemical plant in Ovandep near Ashgabat. Its significance is related to the fact that the economics of Turkmenistan which depends largely on gas export (which is limited by the abilities of pipelines in the country) will acquire a plant processing 1.785 bl. cubic meters of gas annually and produce 600 thousand tons of high quality gasoline A-92 under the standard Euro-5.[27]

In 2005 Japan's-Turkey's consortium *"Dubai Rapid Link (DURL)* with the Japanese *"Mitsubishi", "Obayashi "*and *"Kajima"* and Turkey's *"Yapi Merkezi"* won the tender for constructing Dubai underground amounting $3.2 billion[28]. Dubai underground is conducted automatically from the unitary dispatch center and after construction has become the longest underground system in the world.[29]

Turkey and Japan may cooperate in investing in the infrastructure and energy of the Middle East, Africa and Europe via Turkey.

Achieving strategic partnership

Positive changes in bilateral political relations were furthered by increased number of high-level visits over the last years. In 2013 two prime ministerial visits were made from Japan to Turkey. During his May 2013 meeting in Turkey, Japanese Prime Minister Sh. Abe joined a signing ceremony to entrust the Sinop Nuclear Power Plant, which was won by the Japanese *"Mitsubishi"* and

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[26] http://www.jbic.go.jp/en/about/press/2009/0319-01/index.html

[27] http://www/e-plastic.ru/news/nachalos-stroitelstvo-novogo-turkmeno-yapono-tureckogo=gkhk_9230.html

[28] www.votpusk.ru/news.asp?msg=72580

[29] Ibidem.

French *"Areva Consortium"*. Abe's second visit, on the 29th of October 2013, was at the opening ceremony of Marmaray, which connects Asia to Europe under the Bosporus with a Japanese-built rail system.

The contractor of this large -scale project was the consortium *"TGN"*, including the Japan's *"Tansei"* and Turkey's *"Nurol"* and *"Gama"*. The project accounted for $4.5 bl. The substantial part of it was provided by *Japan Bank for International Cooperation- JBIC*[30]. In the opinion of J.Burkshir Miller, an American researcher, "the Marmaray tunnel project in Istanbul is an example of Japan's emphasis on using soft power in the Middle East to complement its increased role in international security issues (such as its the antipiracy mission in the Gulf of Aden)"[31].

In May 2013 during the visit of Sh. Abe to Turkey 'A Joint Declaration On The Establishment Of Strategic Partnership Between Japan And The Republic Of Turkey' was signed thus " upgrading the level of cooperation to mutually beneficial strategic partnership to promote common interests of both countries through bilateral and multilateral cooperation"[32].

The main provisions of the Declaration affirmed regular meetings between The Prime Ministers, periodic meetings between Ministries of Foreign Affairs as well as consultations at the level of Vice-Ministries and other senior officials.

Both countries welcomed the progress in cooperation, where Japanese companies are playing a prominent role through such projects as the Marmaray Rail Tube Crossing Project and the Izmit Bay Bridge Construction Project, the construction of the Sinop Nuclear Power Plant according to the "Agreement between the Government of Japan and the Government of the Republic of Turkey for Cooperation in the Use of Nuclear Energy for peaceful purposes" and the" Agreement on Cooperation for Development of Nuclear Power Plants and the Nuclear Power Industry in the Republic of Turkey"[33].

During the visit of the Prime Minister of Turkey R. Erdogan to Japan in January 2014 the formal items for Japan's export of nuclear reactors were negotiated. At present geodesic and seismic research has started at the construction site of the Sinop Plant.

At this visit both countries decided to found the Turkish-Japanese Science and Technology University in Istanbul which is expected to train students with not only Turkish and Japanese languages, but also their culture. Thus, they intend to develop personnel who can work in Turkish-Japanese companies.

Economic cooperation is expected to continue in the area of aerospace industry, aviation and defense industry. The launch of Japanese-made satellite *"Tursat 4A"* from the space station Baikonur amplified Turkey's communication

[30] Asahi simbun. 30.10.2013.

[31] Miller Berkshire J. Japan's Strategic Push with Turkey//The Diplomat.18.03.2014.

[32] www.mofa.go.jp/files/000004160.pdf

[33] Ibid

abilities for broadcasting along the perimeter of Europe, Asia, the Middle East, Africa[34].

According to the Declaration on Strategic Partnership both countries agreed on cooperation in defense industry. Japanese company *"Mitsubishi"* is planning to construct a joint venture for production of tanks' engines that will fully remove the limitations existing in Japan towards arms export. Turkey's Minister of National Defense I. Yilmaz in his interview to the Japanese *"Nihon Keizai"* characterized the prospects of Turkish-Japanese defense cooperation in the following words: "We are framing with *"Mitsubishi "*a special group for producing engines for tanks and components and are planning the production of new generation of tanks *"Altay"*[35]. In future Turkey is going to start with Japanese companies the production of new engines for helicopters, drones and infrared sensors as well as energy sets for submarines and ships[36].

The largest pharmaceutical company in Japan and the 15th in the world *"Takeda"* has started sales and marketing activities in Turkey, which they see as a key developing market. What attracts the company to Turkey is that the medical sector is growing quickly, making Turkey a fast-growing European market as the European market has been saturated[37].

*"Maekawa Inc., "*which has six cooling system factories across the world, decided to shut down its Belgium factory and re-open it in Turkey.

Turkey and Japan agreed on shooting the movie about the tragedy of Ertugrul, about the aid and sympathy which was imposed by the Japanese government to rescued crew as well as about the relations following this event. In December 2014 the film "Shipwreck-1890", the shooting of which was sponsored by Turkish airlines, started demonstrating in 309 cinemas in Japan and 300 cinemas in Turkey.

In order to further their trade relations, Tukey and Japan started talks about Free Trade Agreement (FTA) in 2014. Because of Turkey's membership in the European Union's Customs Union, it cannot independently sign FTAs with third countries. Turkey can sign FTAs with third countries of the EU only if EU has signed them. Negotiations on a FTA between Japan and EU started in 2013 but still remain unsolved. Ankara and Tokyo are planning to hold negotiations on the problem parallel to those of the EU – Japan FTA. Japan may benefit from FTA with Turkey as it can enter the markets of the Caucasus, the Middle East, Africa and Europe via Turkey and also make use of the young Turkish labor force as it can't enter into these markets.

T. Matsushita, the deputy minister of economy, trade and industry of Japan, said "a free trade agreement 'absolutely' must be signed between the two coun-

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[34]www.zaman.com.tr/sonm-haberler-turcat-4a-tv-kanalarinin-yeni-frekanslari-2245053.html

[35] www.sanyigazetesi.comtr/savunma 30.12.2013.

[36] www.dunya.com/guncel/2014-de-japon-yili-olmaya-aday-214268.html

[37] http://www/trdefence.com/?p=3176/is-a-turkish-japanese-trade-agreement-imminent

tries to strengthen bilateral relations".[38] He stated that groundwork must be done to finalize it. He also added that Japan needed the young population that Turkey had. In his words, "two countries can join forces and connect the world, he recalled that geographical distance today has the ability, as in did in the past, to interconnect the nations through trade.[39]

Speaking about the future of Turkey-Japanese relations the PM of Japan Sh. Abe has pointed out that "Japan desires to establish a win-win relationship that will lead both countries to success by supporting Japanese firms' (landing contracts) abroad."[40] The idea, uttered by Nippon Keidanren Japan-Turkey Joint Economic Committee Chairman S. Umeda, that "we see Turkey as a stepping stone"[41] came to the fore.

The limits of political affiliation

Although bilateral political and economic cooperation have huge potential for growth there are some limitations on cooperation on regional and international issues between Ankara and Tokyo. During Prime Minister Erdogan's visit to Japan, problems in the Middle East such as Syria and Egypt were the main topics of conversation. The Turkish government expected that Tokyo would be able to support Ankara concerning its Middle East policy, its attitude towards security issues and towards its position in regard with Syria, in particular. Some experts suggest that Japan is acting in coordination with the USA and is tending to abide by 'the concert of powers' and is carrying out humanitarian actions regarding Syrian rebels.[42]

Though Tokyo seeks for a more prominent role in international affairs in the Middle East region it traditionally follows the USA policy in the international security issues and will not deviate from this strategy. In this situation, Turkey and Japan agreed to cooperate in the Middle East according to the policies of the United States and NATO. Japan can only support Turkey to help it overcome the Syrian refugee crisis.[43]

There are some difficult issues in Turkish-Japanese common approach in East Asia. Turkey has well- developed political and economic relations with China and South Korea. That's why Ankara chose to be neutral in the dispute between Tokyo and Beijing regarding the Senkaku/Diaoyu islands located in East China sea and stay far away from tensions between China and Japan. The Dokdo/Takeshima island between Japan and South Korea as well as the Sea of Japan/ East Sea denomination create problems among them. Although

[38] http://news.vail.ru/politics/16383841/

[39] Ibidem.

[40] Asahi Simbun 28.10.2013

[41] http://www.trdefence/com/?p=3176

[42] vz.ru/world/2013/6/11/636650.html

[43] www.turkishweekly.net/2014/01/13/comment/golden-year-of-turkish-japanese-relations/

these maritime disputes seem less sensitive than the Japan-China issues, Tokyo and Seoul still haven't resolved them. Turkey has deep-rooted relations with South Korea and has always chosen to remain neutral in these disputes.

In November 2015 after the crash of Russian airplane by the Turkish air forces, the Japanese government came to neutral position, suggesting that" Russia and Tukey should manifest composure"[44]. According to the General secretary of the Japanese government Y. Suga "Japan is tracking the situation and looking for all the countries to cooperate against terrorism[45]". Later in August 2016 Japan "highly appreciated the rapprochement between Russia and Turkey" underlining "its great significance[46]". Herewith, Japan pointed out to the "intermediary role of Turkey between the West and Russia[47]".

The relations between Turkey and Japan have objective potential for development on mutually beneficial basis. First of all, it concerns the economic, scientific and technical cooperation which has recently intensified.

When we analyze the present condition of bilateral relations the main question we should answer is what is their role in Asia and in the world politics, do they represent a stable factor of international relations, what is their influence on the situation in the region. Both countries have great influence on regional and international affairs, both of them have become major supporters of the post-war system of alliances constructed by the USA. According to the magazine *"National Review"* "the options of Tukey and Japan will mean a great deal to the US which could face difficulties in maintaining its influence in the Middle East in case of lacking close working relations with both of them[48]".

In this sense we can point out that mutual understanding on even small issues regarding Asia and other regions, their willingness to find common meeting-ground for political dialogue are very important and useful for easing tension in Asia. The trend for intencifying of Turkish-Japanese relations seems rather stable in future and it will bear considerable fruit to both countries.

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[44] Asahi simbun. 23.11.2015

[45] Nihon Keizai.11.08.016.

[46] Ididem.

[47] Ibidem.

[48] National Review.05.10.2010.

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